AD-A096 867 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT,(U)
FEB 81 G C EVERSTINE, M M HURWITZ
UNCLASSIFIED DTNSRDC/CMLD-81-04 NL

1 OF 5
AD
A096867

LEVEL II

DTNSRDC/CMLD-81-04

DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER

Bethesda, Maryland 20084

AD A096867

NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT

by

Gordon C. Everstine & Myles M. Hurwitz

Approved for Public Release: Distribution Unlimited

Computation, Mathematics, & Logistics Department

Departmental Report

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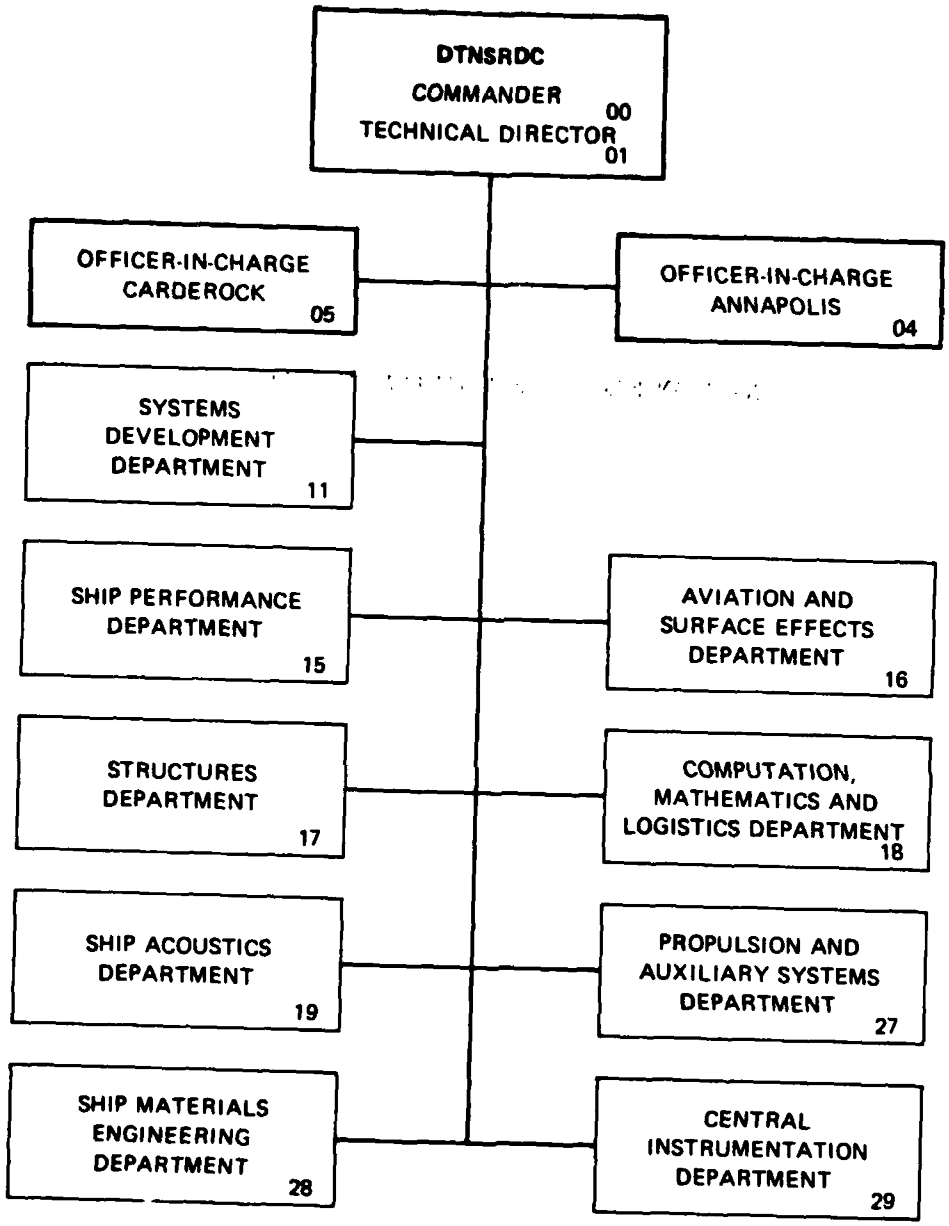
MAJOR DTNSRDC ORGANIZATIONAL COMPONENTS



SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

14

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NASTRAN

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This is a compilation of computer output for 23 sample problems illustrating the basic capabilities of the NASTRAN structural analysis computer program. These problems are used primarily in NASTRAN training courses. Problem descriptions appear in a companion report DTNSRDC/CMLD-81-05.

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TABLE OF CONTENTS

CDC CYBER SERIES
MODEL 173

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
$  THIS IS A COMMENT AND IGNORED BY NASTRAN.
$   STATIC STRESS ANALYSIS IS PERFORMED USING RIGID FORMAT 1.
SOL 1,0
APP DISP
TIME 10
CEND
```

5/8-INCH DIAMETER STEEL BEAM

```
                    C A S E   C O N T R O L   D E C K   E C H O
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1
  2      SUBTITLE=CANTILEVER BEAM WITH TRANSVERSE POINT LOAD
  3      LABEL=  5/8-INCH DIAMETER STEEL BEAM
  4      $  THE NEXT TWO CARDS SPECIFY CONSTRAINTS AND APPLIED LOADS.
  5       SPC= 11
  6       LOAD =  30
  7        SET 6 = 1,3,5,  7,11,15,17,19,21
  8      $  THE NEXT 8 CARDS MAKE OUTPUT REQUESTS.
  9      DISP=ALL
 10      OLOAD=ALL
 11      STRESS=ALL
 12      ELFORCE=ALL
 13      SPCFORCE=ALL
 14      ESE=ALL
 15       GPFORCE=  6
 16      NCHECK=5
 17      $        ESE, GPFORCE, AND NCHECK ARE NOT AVAILABLE ON SPERRY/NASTRAN.
 18      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETEP STEEL BEAM

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT    .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   1-     BAROR           31                      0.0     1.      0.0     1
   2-     CBAR    1               1       2
   3-     CBAR    2               2       3
   4-     CBAR    3               3       4
   5-     CBAR    4               4       5
   6-     CBAR    5               5       6
   7-     CBAR    6               6       7
   8-     CBAR    7               7       8
   9-     CBAR    8               8       9
  10-     CBAR    9               9       10
  11-     CBAR    10              10      11
  12-     CBAR    11              11      12
  13-     CBAR    12              12      13
  14-     CBAR    13              13      14
  15-     CBAR    14              14      15
  16-     CBAR    15              15      16
  17-     CBAR    16              16      17
  18-     CBAR    17              17      18
  19-     CBAR    18              18      19
  20-     CBAR    19              19      20
  21-     CBAR    20              20      21
  22-     FORCE   30      16              1.0     3.0     -4.0    0.0
  23-     GRDSET                                                  345
  24-     GRID    1               0.0
  25-     GRID    2               5.
  26-     GRID    3               10.
  27-     GRID    4               15.
  28-     GRID    5               20.
  29-     GRID    6               25.
  30-     GRID    7               30.
  31-     GRID    8               35.
  32-     GRID    9               40.
  33-     GRID    10              45.
  34-     GRID    11              50.
  35-     GRID    12              55.
  36-     GRID    13              60.
  37-     GRID    14              65.
  38-     GRID    15              70.
  39-     GRID    16              75.
  40-     GRID    17              80.
  41-     GRID    18              85.
  42-     GRID    19              90.
  43-     GRID    20              95.
  44-     GRID    21              100.
  45-     MAT1    32      30.+6           .3      7.324-4                         +STEEL
  46-     PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
  47-     +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
  48-     +P31A   0.75    0.75    0.
  49-     SPC1    11      126     1
          ENDDATA
```

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

```
*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE       34 STARTING WITH ID        1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL       ( N =    60 )
              TIME ESTIMATE=        1            C AVG =      4          PC AVG =      0   SPILL GROUPS =      0            S AVG =       1
           ADDITIONAL CORE= -28488               C MAX =      5           PCMAX =      0      PC GROUPS =      0  PREFACE LOOPS =       1

                                                 MPYAD--NULL MATRIX PRODUCT
                                                 METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
```

5/8-INCH DIAMETER STEEL BEAM

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -6.6594084E-10

                              MPYAD--NULL MATRIX PRODUCT
                              METHOD 1 T ,NBR PASSES =    1,EST. TIME =       .0
```

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CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

E L E M E N T   S T R A I N   E N E R G I E S

ELEMENT-TYPE = BAR * TOTAL FOR ALL TYPES = 5.0069382E+00

ELEMENT-ID	STRAIN-ENERGY	PERCENT OF TOTAL
1	9.360804E-01	18.6957
2	8.114698E-01	16.2069
3	6.957600E-01	13.8959
4	5.889504E-01	11.7627
5	4.91042[illegible]E-01	9.8072
6	4.020350E-01	8.0296
7	3.21[illegible]282E-01	6.4296
8	2.507222E-01	5.0075
9	1.884169E-01	3.7631
10	1.350122E-01	2.6965
11	9.050854E-02	1.8077
12	5.4[illegible]0551E-02	1.0966
13	2.820324E-02	.5633
14	1.040173E-02	.2077
15	1.500970E-03	.0300
16	4.064766E-21	.0000
17	-4.772115E-11	-.0000
18	-6.921388E-11	-.0000
19	4.553545E-11	.0000
20	-1.129279E-11	-.0000

5/8-INCH DIAMETER STEEL BEAM

G R I D   P O I N T   F O R C E   B A L A N C E

POINT-ID	ELEMENT-ID	SOURCE	T1	T2	T3	R1	R2	R3
1		F-OF-SPC	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	3.000000E+02
1	1	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-3.000000E+02
1		*TOTALS*	0.0	0.0	0.0	0.0	0.0	0.0
3	2	BAR	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	2.600000E+02
3	3	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-2.600000E+02
3		*TOTALS*	2.842171E-14	3.637979E-12	0.0	0.0	0.0	-3.637979E-11
5	4	BAR	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	2.200000E+02
5	5	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-2.200000E+02
5		*TOTALS*	0.0	-8.731149E-11	0.0	0.0	0.0	-1.018634E-10
7	6	BAR	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	1.800000E+02
7	7	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-1.800000E+02
7		*TOTALS*	2.273737E-13	7.275958E-12	0.0	0.0	0.0	-1.891749E-10
11	10	BAR	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	1.000000E+02
11	11	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-1.000000E+02
11		*TOTALS*	2.273737E-13	-2.910383E-11	0.0	0.0	0.0	-8.440111E-10
15	14	BAR	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	2.000000E+01
15	15	BAR	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	-2.000000E+01
15		*TOTALS*	2.273737E-13	1.455192E-11	0.0	0.0	0.0	-2.415618E-09
17	16	BAR	2.273737E-13	-1.251465E-09	0.0	0.0	0.0	-1.589069E-08
17	17	BAR	-2.273737E-13	1.120497E-09	0.0	0.0	0.0	1.399894E-08
17		*TOTALS*	0.0	-1.309672E-10	0.0	0.0	0.0	-1.891749E-09
19	18	BAR	0.0	-4.365575E-10	0.0	0.0	0.0	-6.926712E-09
19	19	BAR	0.0	-7.275958E-11	0.0	0.0	0.0	3.725290E-09
19		*TOTALS*	0.0	-5.093170E-10	0.0	0.0	0.0	-3.201421E-09
21	20	BAR	0.0	-3.055902E-10	0.0	0.0	0.0	-5.820766E-11
21		*TOTALS*	0.0	-3.055902E-10	0.0	0.0	0.0	-5.820766E-11

CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

E L E M E N T P R E C I S I O N C H E C K

SIGNIFICANT DIGITS FOR SUBCASE = 1, 30 = LOAD

TYPE	EID	M1A	M2A	M1B	M2B	V1	V2	FA	T	SA
BAR	15	10.3	14.5	.9	14.5	10.0	14.5	13.0	14.5	13.0
BAR	16	1.3	14.5	.7	14.5	.5	14.5	0.0	14.5	0.0
BAR	17	1.1	14.5	.4	14.5	.4	14.5	0.0	14.5	0.0
BAR	18	.8	14.5	.2	14.5	0.0	14.5	1.5	14.5	14.5
BAR	19	.5	14.5	0.0	14.5	14.5	14.5	14.5	14.5	14.5
BAR	20	.1	14.5	0.0	14.5	0.0	14.5	14.5	14.5	14.5

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2077, SDR2 OUTPUT DATA BLOCK NO. 2 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

*** SYSTEM WARNING MESSAGE 3001

ATTEMPT TO OPEN DATA SET 205 IN SUBROUTINE SDR2 , WHICH WAS NOT DEFINED IN THE FIST

CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.629726E-06	-1.632559E-02	0.0	0.0	0.0	-6.453049E-03
3	G	3.259452E-06	-6.380382E-02	0.0	0.0	0.0	-1.246106E-02
4	G	4.889179E-06	-1.402095E-01	0.0	0.0	0.0	-1.802403E-02
5	G	6.518905E-06	-2.433175E-01	0.0	0.0	0.0	-2.314197E-02
6	G	8.148631E-06	-3.709025E-01	0.0	0.0	0.0	-2.781486E-02
7	G	9.778357E-06	-5.207395E-01	0.0	0.0	0.0	-3.204272E-02
8	G	1.140808E-05	-6.806031E-01	0.0	0.0	0.0	-3.582555E-02
9	G	1.303781E-05	-8.742692E-01	0.0	0.0	0.0	-3.916333E-02
10	G	1.466754E-05	-1.081510E+00	0.0	0.0	0.0	-4.205607E-02
11	G	1.629726E-05	-1.298102E+00	0.0	0.0	0.0	-4.450378E-02
12	G	1.792699E-05	-1.525821E+00	0.0	0.0	0.0	-4.650645E-02
13	G	1.955671E-05	-1.762440E+00	0.0	0.0	0.0	-4.806409E-02
14	G	2.118644E-05	-2.005735E+00	0.0	0.0	0.0	-4.917668E-02
15	G	2.281617E-05	-2.253490E+00	0.0	0.0	0.0	-4.984424E-02
16	G	2.444589E-05	-2.503451E+00	0.0	0.0	0.0	-5.006676E-02
17	G	2.444589E-05	-2.753785E+00	0.0	0.0	0.0	-5.006676E-02
18	G	2.444589E-05	-3.004118E+00	0.0	0.0	0.0	-5.006676E-02
19	G	2.444589E-05	-3.254452E+00	0.0	0.0	0.0	-5.006676E-02
20	G	2.444589E-05	-3.504786E+00	0.0	0.0	0.0	-5.006676E-02
21	G	2.444589E-05	-3.755120E+00	0.0	0.0	0.0	-5.006676E-02

5/3-INCH DIAMETER STEEL BEAM

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	3.000000E+00	-4.000000E+00	0.0	0.0	0.0	0.0

CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-3.000000E+00	4.000000E+00	0.0	0.0	0.0	3.000000E+02

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CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5,8-INCH DIAMETER STEEL BEAM

F O R C E S   I N   B A R   E L E M E N T S   (C B A R)

ELEMENT ID.	BEND-MOMENT END-A PLANE 1	BEND-MOMENT END-A PLANE 2	BEND-MOMENT END-B PLANE 1	BEND-MOMENT END-B PLANE 2	- SHEAR - PLANE 1	- SHEAR - PLANE 2	AXIAL FORCE	TORQUE
1	-3.000000E+02	0.0	-2.800000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
2	-2.800000E+02	0.0	-2.600000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
3	-2.600000E+02	0.0	-2.400000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
4	-2.400000E+02	0.0	-2.200000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
5	-2.200000E+02	0.0	-2.000000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
6	-2.000000E+02	0.0	-1.800000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
7	-1.800000E+02	0.0	-1.600000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
8	-1.600000E+02	0.0	-1.400000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
9	-1.400000E+02	0.0	-1.200000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
10	-1.200000E+02	0.0	-1.000000E+02	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
11	-1.000000E+02	0.0	-8.000000E+01	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
12	-8.000000E+01	0.0	-6.000000E+01	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
13	-6.000000E+01	0.0	-4.000000E+01	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
14	-4.000000E+01	0.0	-2.000000E+01	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
15	-2.000000E+01	0.0	2.444722E-08	0.0	-4.000000E+00	0.0	3.000000E+00	0.0
16	2.235174E-08	0.0	1.0530[illegible]E-08	0.0	1.164153E-09	0.0	-2.273737E-13	0.0
17	1.490116E-03	0.0	9.0803[illegible]E-09	0.0	1.164153E-09	0.0	-2.273737E-13	0.0
18	7.450581E-09	0.0	6.286427E-09	0.0	2.328306E-10	0.0	0.0	0.0
19	3.725290E-09	0.0	3.725290E-09	0.0	0.0	0.0	0.0	0.0
20	1.862645E-09	0.0	-4.656613E-10	0.0	4.656613E-10	0.0	0.0	0.0

CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

S T R E S S E S I N B A R E L E M E N T S (C B A R)

ELEMENT ID.	SA1 / SB1	SA2 / SB2	SA3 / SB3	SA4 / SB4	AXIAL STRESS	SA-MAX / SB-MAX	SA-MIN / SB-MIN	M.S.-T / M.S.-C
1	1.251669E+04	-1.251669E+04	0.0	0.0	9.778357E+00	1.252647E+04	-1.250691E+04	
	1.168224E+04	-1.168224E+04	0.0	0.0		1.169202E+04	-1.167246E+04	
2	1.168224E+04	-1.168224E+04	0.0	0.0	9.778357E+00	1.169202E+04	-1.167246E+04	
	1.084780E+04	-1.084780E+04	0.0	0.0		1.085758E+04	-1.083802E+04	
3	1.084780E+04	-1.084780E+04	0.0	0.0	9.778357E+00	1.085758E+04	-1.083802E+04	
	1.001335E+04	-1.001335E+04	0.0	0.0		1.002313E+04	-1.000357E+04	
4	1.001335E+04	-1.001335E+04	0.0	0.0	9.778357E+00	1.002313E+04	-1.000357E+04	
	9.178905E+03	-9.178905E+03	0.0	0.0		9.188684E+03	-9.169127E+03	
5	9.178905E+03	-9.178905E+03	0.0	0.0	9.778357E+00	9.188684E+03	-9.169127E+03	
	8.344459E+03	-8.344459E+03	0.0	0.0		8.354238E+03	-8.334681E+03	
6	8.344459E+03	-8.344459E+03	0.0	0.0	9.778357E+00	8.354238E+03	-8.334681E+03	
	7.510013E+03	-7.510013E+03	0.0	0.0		7.519792E+03	-7.500235E+03	
7	7.510013E+03	-7.510013E+03	0.0	0.0	9.778357E+00	7.519792E+03	-7.500235E+03	
	6.675567E+03	-6.675567E+03	0.0	0.0		6.685346E+03	-6.665789E+03	
8	6.675567E+03	-6.675567E+03	0.0	0.0	9.778357E+00	6.685346E+03	-6.665789E+03	
	5.841121E+03	-5.841121E+03	0.0	0.0		5.850900E+03	-5.831343E+03	
9	5.841121E+03	-5.841121E+03	0.0	0.0	9.778357E+00	5.850900E+03	-5.831343E+03	
	5.006676E+03	-5.006676E+03	0.0	0.0		5.016454E+03	-4.996897E+03	
10	5.006676E+03	-5.006676E+03	0.0	0.0	9.778357E+00	5.016454E+03	-4.996897E+03	
	4.172230E+03	-4.172230E+03	0.0	0.0		4.182008E+03	-4.162451E+03	
11	4.172230E+03	-4.172230E+03	0.0	0.0	9.778357E+00	4.182008E+03	-4.162451E+03	
	3.337784E+03	-3.337784E+03	0.0	0.0		3.347562E+03	-3.328005E+03	
12	3.337784E+03	-3.337784E+03	0.0	0.0	9.778357E+00	3.347562E+03	-3.328005E+03	
	2.503338E+03	-2.503338E+03	0.0	0.0		2.513116E+03	-2.493559E+03	
13	2.503338E+03	-2.503338E+03	0.0	0.0	9.778357E+00	2.513116E+03	-2.493559E+03	
	1.668892E+03	-1.668892E+03	0.0	0.0		1.678670E+03	-1.659113E+03	
14	1.668892E+03	-1.668892E+03	0.0	0.0	9.778357E+00	1.678670E+03	-1.659113E+03	
	8.344459E+02	-8.344459E+02	0.0	0.0		8.442243E+02	-8.246676E+02	
15	8.344459E+02	-8.344459E+02	0.0	0.0	9.778357E+00	8.442243E+02	-8.246676E+02	
	-1.019994E-06	1.019994E-06	0.0	0.0		9.778358E+00	9.778356E+00	
16	-9.325660E-07	9.325660E-07	0.0	0.0	-7.411137E-13	9.325653E-07	-9.325667E-07	
	-6.897103E-07	6.897103E-07	0.0	0.0		6.897095E-07	-6.897110E-07	

5/8-INCH DIAMETER STEEL BEAM

S T R E S S E S   I N   B A R   E L E M E N T S   (C B A R)

ELEMENT ID.	SA1 / SB1	SA2 / SB2	SA3 / SB3	SA4 / SB4	AXIAL STRESS	SA-MAX / SB-MAX	SA-MIN / SB-MIN	M.S.-T / M.S.-C
17	-6.217107E-07	6.217107E-07	0.0	0.0	-7.411137E-13	6.217099E-07	-6.217114E-07	
	-3.788549E-07	3.788549E-07	0.0	0.0		3.788542E-07	-3.788557E-07	
18	-3.108553E-07	3.108553E-07	0.0	0.0	0.0	3.108553E-07	-3.108553E-07	
	-2.622842E-07	2.622842E-07	0.0	0.0		2.622842E-07	-2.622842E-07	
19	-1.554277E-07	1.554277E-07	0.0	0.0	0.0	1.554277E-07	-1.554277E-07	
	-1.554277E-07	1.554277E-07	0.0	0.0		1.554277E-07	-1.554277E-07	
20	-7.771383E-08	7.771383E-08	0.0	0.0	0.0	7.771383E-08	-7.771383E-08	
	1.942846E-08	-1.942846E-08	0.0	0.0		1.942846E-08	-1.942846E-08	

* * * END OF JOB * * *

CDC CYBER SERIES
MODEL 173

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
$   COMMENTS HAVE A $ IN CARD COLUMN 1
APP DISP
SOL 1,0
TIME 10
CEND
```

```
                         C A S E    C O N T R O L    D E C K    E C H O
 CARD
 COUNT
   1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1A
   2      SUBTITLE=STATIC STRESS ANALYSIS OF ARCH
   3      SPC=21
   4      SET 13 = 1,2,11,12,21,22,31,32,41,
   5                   42,51,52
   6      $  NOTICE HOW LINES ARE CONTINUED
   7      OLOAD=ALL
   8      DISP=ALL
   9      SUBCASE 1
  10         LABEL=PRESSURE LOAD
  11         LOAD=9
  12         SPCFORCE=ALL
  13         STRESS=ALL
  14         FORCE=ALL
  15         STRAIN=ALL
  16         NCHECK=5
  17      SUBCASE 2
  18         LABEL=GRAVITY LOAD
  19         LOAD=8
  20      SUBCASE 3
  21      $        DIFFERENT STRUCTURE CAN BE SOLVED BY CHANGING B.C.
  22         SUBTITLE=STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER
  23         LABEL=AXISYMMETRIC PRESSURE LOAD  (COMPARE TO PROB. 1B)
  24         SPC=22
  25         LOAD=9
  26         STRESS=ALL
  27         OLOAD=NONE
  28      SUBCOM 5
  29         LABEL=FIRST TWO LOADS COMBINED  (ARCH PROBLEM)
  30         SUBSEQ= 1.0, 1.0, 0.0
  31      $   THE NUMBER OF SUBSEQ FACTORS SHOULD EQUAL THE NUMBER OF SUBCASES.
  32         STRESS= 13
  33      BEGIN BULK
```

```
*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		17			1.	0.0	0.0	1	
2-	CBAR	101		1	2					+B101
3-	+B101			-1.5		0.25	-1.5		0.25	
4-	CBAR	102		2	3					+B102
5-	+B102			-1.5		0.25	-1.5		0.25	
6-	CBAR	103		3	4					+B103
7-	+B103			-1.5		0.25	-1.5		0.25	
8-	CBAR	104		4	5					+B104
9-	+B104			-1.5		0.25	-1.5		0.25	
10-	CBAR	105		5	6					+B105
11-	+B105			-1.5		0.25	-1.5		0.25	
12-	CBAR	141		41	42					+B141
13-	+B141			-1.5			-1.5			
14-	CBAR	142		42	43					+B142
15-	+B142			-1.5			-1.5			
16-	CBAR	143		43	44					+B143
17-	+B143			-1.5			-1.5			
18-	CBAR	144		44	45					+B144
19-	+B144			-1.5			-1.5			
20-	CBAR	145		45	46					+B145
21-	+B145			-1.5			-1.5			
22-	CNGRNT	1	2	THRU	5					
23-	CNGRNT	1	11	THRU	15					
24-	CNGRNT	1	21	THRU	25					
25-	CNGRNT	1	31	THRU	35					
26-	CNGRNT	1	41	THRU	45					
27-	CNGRNT	1	51	THRU	55					
28-	CNGRNT	101	102	THRU	105					
29-	CNGRNT	141	142	THRU	145					
30-	CORD2C	16		0.0	0.0	0.0	0.0	0.0	1.	+COR16
31-	+COR16	1.	0.	0.						
32-	CQUAD2	1	3	1	2	12	11			
33-	CQUAD2	2	3	2	3	13	12			
34-	CQUAD2	3	3	3	4	14	13			
35-	CQUAD2	4	3	4	5	15	14			
36-	CQUAD2	5	3	5	6	16	15			
37-	CQUAD2	11	3	11	12	22	21			
38-	CQUAD2	12	3	12	13	23	22			
39-	CQUAD2	13	3	13	14	24	23			
40-	CQUAD2	14	3	14	15	25	24			
41-	CQUAD2	15	3	15	16	26	25			
42-	CQUAD2	21	3	21	22	32	31			
43-	CQUAD2	22	3	22	23	33	32			
44-	CQUAD2	23	3	23	24	34	33			
45-	CQUAD2	24	3	24	25	35	34			
46-	CQUAD2	25	3	25	26	36	35			
47-	CQUAD2	31	3	31	32	42	41			
48-	CQUAD2	32	3	32	33	43	42			
49-	CQUAD2	33	3	33	34	44	43			
50-	CQUAD2	34	3	34	35	45	44			

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 .. 8 .. 9 .. 10 .
51-	CQUAD2	35	3	35	36	46	45
52-	CQUAD2	41	3	41	42	52	51
53-	CQUAD2	42	3	42	43	53	52
54-	CQUAD2	43	3	43	44	54	53
55-	CQUAD2	44	3	44	45	55	54
56-	CQUAD2	45	3	45	46	56	55
57-	CQUAD2	51	3	51	52	62	61
58-	CQUAD2	52	3	52	53	63	62
59-	CQUAD2	53	3	53	54	64	63
60-	CQUAD2	54	3	54	55	65	64
61-	CQUAD2	55	3	55	56	66	65
62-	GRAV	3		386.4	-1.	0.0	0.0
63-	GRDSET		16				16
64-	GRID	1		60.	0.0	0.0	
65-	GRID	2		60.	8.	0.0	
66-	GRID	3		60.	16.	0.0	
67-	GRID	4		60.	24.	0.0	
68-	GRID	5		60.	32.	0.0	
69-	GRID	6		60.	40.	0.0	
70-	GRID	11		60.	0.0	8.	
71-	GRID	12		60.	8.	8.	
72-	GRID	13		60.	16.	8.	
73-	GRID	14		60.	24.	8.	
74-	GRID	15		60.	32.	8.	
75-	GRID	16		60.	40.	8.	
76-	GRID	21		60.	0.0	16.	
77-	GRID	22		60.	8.	16.	
78-	GRID	23		60.	16.	16.	
79-	GRID	24		60.	24.	16.	
80-	GRID	25		60.	32.	16.	
81-	GRID	26		60.	40.	16.	
82-	GRID	31		60.	0.0	24.	
83-	GRID	32		60.	8.	24.	
84-	GRID	33		60.	16.	24.	
85-	GRID	34		60.	24.	24.	
86-	GRID	35		60.	32.	24.	
87-	GRID	36		60.	40.	24.	
88-	GRID	41		60.	0.0	32.	
89-	GRID	42		60.	8.	32.	
90-	GRID	43		60.	16.	32.	
91-	GRID	44		60.	24.	32.	
92-	GRID	45		60.	32.	32.	
93-	GRID	46		60.	40.	32.	
94-	GRID	51		60.	0.0	40.	
95-	GRID	52		60.	8.	40.	
96-	GRID	53		60.	16.	40.	
97-	GRID	54		60.	24.	40.	
98-	GRID	55		60.	32.	40.	
99-	GRID	56		60.	40.	40.	
100-	GRID	61		60.	0.0	48.	

```
                                    S O R T E D   B U L K   D A T A   E C H O
     CARD
     COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
      101-        GRID    62               60.     8.      48.
      102-        GRID    63               60.     16.     48.
      103-        GRID    64               60.     24.     48.
      104-        GRID    65               60.     32.     48.
      105-        GRID    66               60.     40.     48.
      106-        MAT1    21      30.+6            .3      7.324-4
      107-        PBAR    17      21      1.       .3333   2.083-2 7.048-2                 +P1
      108-        +P1     -1.     0.25    -1.      -0.25                                   +P1*()
      109-        +P1*()  0.67    0.67
      110-        PLOAD2  9       -1.     1        THRU    5
      111-        PLOAD2  9       -1.     11       THRU    15
      112-        PLOAD2  9       -1.     21       THRU    25
      113-        PLOAD2  9       -1.     31       THRU    35
      114-        PLOAD2  9       -1.     41       THRU    45
      115-        PLOAD2  9       -1.     51       THRU    55
      116-        PLOAD2  3       21      1.
      117-        SPC1    11      123456  6        16      26      36      46      56      +FIX
      118-        +FIX    66
      119-        SPC1    12      246     1        11      21      31      41      51      +SYMXZ
      120-        +SYMXZ  61
      121-        SPC1    13      345     61       THRU    66                              +SYMXY
      122-        SPC1    14      246     6        16      26      36      46      56      +AX
      123-        +AX     66
      124-        SPCADD  21      11      12       13
      125-        SPCADD  22      14      12       13
                  ENDDATA


      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     34 STARTING WITH ID    101

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     18 STARTING WITH ID      1

*** SYSTEM INFORMATION MESSAGE 3107.  EMGOLD IS PROCESSING ELEMENTS OF TYPE = 18, BEGINNING WITH ELEMENT ID =      1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL     ( N =  175 )
          TIME ESTIMATE=       1        C AVG =    30     PC AVG =     0   SPILL GROUPS =    0          S AVG =     1
        ADDITIONAL CORE= -27689         C MAX =    39      PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =     1

                                   METHOD 2 NT,NBR PASSES =    1,EST. TIME =      .1
                                   MPYAD--NULL MATRIX PRODUCT
                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =      .6
```

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD    1 EPSILON SUB E = -4.2834224E-13

*** USER INFORMATION MESSAGE 3035

FOR LOAD    2 EPSILON SUB E = -6.8413349E-13

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 1 T ,NBR PASSES =   1,EST. TIME =      .2

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =  194 )
          TIME ESTIMATE=      2        C AVG =    32        PC AVG =    0   SPILL GROUPS =    0              S AVG =     1
        ADDITIONAL CORE= -27563        C MAX =    42         PCMAX =    0      PC GROUPS =    0  PREFACE LOOPS =     1

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .5
*** USER INFORMATION MESSAGE 3035

FOR LOAD    3 EPSILON SUB E = -3.9495476E-13

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 2 T ,NBR PASSES =   1,EST. TIME =      .1

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2077, SDR2 OUTPUT DATA BLOCK NO. 2 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

*** SYSTEM WARNING  MESSAGE 3001

ATTEMPT TO OPEN DATA SET 205 IN SUBROUTINE SDR2  , WHICH WAS NOT DEFINED IN THE FIST
```

PRESSURE LOAD SUBCASE 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-2.228961E-04	0.0	-2.613066E-05	0.0	3.036018E-07	0.0
2	G	-2.000858E-04	1.515759E-05	-2.504486E-05	2.404584E-06	-1.528023E-07	-4.634204E-06
3	G	-1.397128E-04	2.479355E-05	-2.198067E-05	4.549415E-06	-1.252483E-06	-7.492138E-06
4	G	-6.487411E-05	2.527797E-05	-1.731531E-05	5.910265E-06	-2.202558E-06	-7.175686E-06
5	G	-9.750854E-06	1.623480E-05	-1.091820E-05	2.788822E-06	-1.854165E-06	-3.242524E-06
6	G	0.0	0.0	0.0	0.0	0.0	0.0
11	G	-2.215757E-04	0.0	-2.180258E-05	0.0	4.481374E-07	0.0
12	G	-2.020160E-04	1.354617E-05	-2.076673E-05	-2.214481E-06	9.911967E-08	-4.364811E-06
13	G	-1.494580E-04	2.210081E-05	-1.783662E-05	-4.147675E-06	-7.648695E-07	-7.361134E-06
14	G	-8.125939E-05	2.227011E-05	-1.337581E-05	-4.874579E-06	-1.590148E-06	-7.823060E-06
15	G	-2.306015E-05	1.365692E-05	-7.505040E-06	1.330249E-06	-1.581271E-06	-5.017540E-06
16	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	-2.135432E-04	0.0	-1.723601E-05	0.0	1.351567E-06	0.0
22	G	-1.966607E-04	1.206122E-05	-1.629692E-05	5.433712E-07	1.045257E-06	-3.732296E-06
23	G	-1.506442E-04	1.980875E-05	-1.367211E-05	7.918299E-07	2.858393E-07	-6.514902E-06
24	G	-8.942335E-05	2.024835E-05	-9.814294E-06	2.553164E-07	-4.518321E-07	-7.344092E-06
25	G	-3.042703E-05	1.274014E-05	-5.162033E-06	8.350207E-07	-5.381938E-07	-6.006182E-06
26	G	0.0	0.0	0.0	0.0	0.0	0.0
31	G	-2.011848E-04	0.0	-1.273864E-05	0.0	1.702442E-06	0.0
32	G	-1.865722E-04	1.036146E-05	-1.196416E-05	1.020839E-09	1.464494E-06	-3.253360E-06
33	G	-1.462094E-04	1.802015E-05	-9.819624E-06	3.430905E-07	9.339596E-07	-5.747578E-06
34	G	-8.976561E-05	1.873407E-05	-6.845996E-06	1.870064E-06	4.930057E-07	-6.934907E-06
35	G	-3.154846E-05	1.204092E-05	-3.451803E-06	1.626634E-06	3.640840E-07	-6.277294E-06
36	G	0.0	0.0	0.0	0.0	0.0	0.0
41	G	-1.897684E-04	0.0	-8.472594E-06	0.0	7.400067E-07	0.0
42	G	-1.769868E-04	9.901861E-06	-7.917688E-06	3.551792E-08	5.167453E-07	-2.829161E-06
43	G	-1.404587E-04	1.609378E-05	-6.417911E-06	9.441857E-08	1.580049E-08	-5.225058E-06
44	G	-8.647633E-05	1.753704E-05	-4.363546E-06	1.922529E-07	-3.489719E-07	-6.464952E-06
45	G	-2.960332E-05	1.131237E-05	-2.210590E-06	4.218928E-07	-2.452800E-07	-5.211356E-06
46	G	0.0	0.0	0.0	0.0	0.0	0.0
51	G	-1.890514E-04	0.0	-4.282695E-06	0.0	-2.430417E-07	0.0
52	G	-1.780311E-04	9.430153E-06	-3.990950E-06	-1.945509E-07	-4.134851E-07	-2.471172E-06
53	G	-1.458734E-04	1.606309E-05	-3.207681E-06	-8.356833E-07	-8.283284E-07	-4.763750E-06
54	G	-9.545047E-05	1.738850E-05	-2.174318E-06	-1.990449E-06	-1.131615E-06	-6.058324E-06
55	G	-3.543587E-05	1.181843E-05	-1.138244E-06	-3.475293E-07	-8.642087E-07	-6.920278E-06
56	G	0.0	0.0	0.0	0.0	0.0	0.0
61	G	-1.897469E-04	0.0	0.0	0.0	0.0	0.0
62	G	-1.794614E-04	9.233520E-06	0.0	0.0	0.0	-2.321978E-06
63	G	-1.490654E-04	1.583876E-05	0.0	0.0	0.0	-4.586596E-06
64	G	-9.990054E-05	1.732827E-05	0.0	0.0	0.0	-6.653961E-06
65	G	-3.831795E-05	1.174468E-05	0.0	0.0	0.0	-7.250749E-06
66	G	0.0	0.0	0.0	0.0	0.0	0.0

GRAVITY LOAD SUBCASE 2

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-1.023634E-04	0.0	-7.008144E-06	0.0	3.046781E-07	0.0
2	G	-8.547237E-05	8.416967E-06	-6.872609E-06	2.560079E-06	3.203342E-07	-3.259090E-06
3	G	-4.472267E-05	1.245711E-05	-6.434934E-06	3.683676E-06	3.965800E-07	-4.553741E-06
4	G	-4.695338E-06	1.197187E-05	-5.392288E-06	2.500327E-06	4.539116E-07	-3.082887E-06
5	G	9.427450E-06	6.655325E-06	-3.494404E-06	-3.046970E-06	3.159292E-07	1.410336E-07
6	G	0.0	0.0	0.0	0.0	0.0	0.0
11	G	-1.014205E-04	0.0	-5.749096E-06	0.0	1.576057E-07	0.0
12	G	-8.402360E-05	8.498238E-06	-5.611438E-06	-2.040344E-06	2.003684E-07	-3.860818E-06
13	G	-4.175013E-05	1.282056E-05	-5.132396E-06	-2.554847E-06	2.882576E-07	-5.474519E-06
14	G	-6.415477E-07	1.123388E-05	-4.113376E-06	-1.259724E-06	2.591331E-07	-3.442012E-06
15	G	1.078038E-05	5.737268E-06	-2.339640E-06	9.418586E-07	-2.755101E-08	1.154938E-06
16	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	-9.994392E-05	0.0	-4.613229E-06	0.0	2.604540E-07	0.0
22	G	-8.240266E-05	8.326987E-06	-4.451628E-06	2.320563E-07	2.301182E-07	-3.919672E-06
23	G	-4.010319E-05	1.244775E-05	-3.929585E-06	2.534491E-07	1.123007E-07	-5.465271E-06
24	G	-4.564957E-09	1.072716E-05	-2.976342E-06	5.331842E-08	-9.009750E-08	-3.271599E-06
25	G	1.005771E-05	5.387799E-06	-1.608385E-06	1.166545E-07	-1.638716E-07	1.146185E-06
26	G	0.0	0.0	0.0	0.0	0.0	0.0
31	G	-9.742015E-05	0.0	-3.490135E-06	0.0	3.083879E-07	0.0
32	G	-8.041890E-05	7.975443E-06	-3.325915E-06	1.231038E-06	2.256739E-07	-3.783760E-06
33	G	-3.978188E-05	1.191830E-05	-2.830161E-06	1.314137E-06	-1.605286E-08	-5.226798E-06
34	G	-1.635680E-06	1.032727E-05	-2.040271E-06	6.066658E-09	-2.579556E-07	-3.117841E-06
35	G	8.709633E-06	5.272908E-06	-1.087129E-06	6.311973E-08	-1.739997E-07	9.742547E-07
36	G	0.0	0.0	0.0	0.0	0.0	0.0
41	G	-9.467268E-05	0.0	-2.292500E-06	0.0	1.764459E-07	0.0
42	G	-7.845081E-05	7.501564E-06	-2.175745E-06	8.430916E-09	1.277608E-07	-3.208692E-06
43	G	-4.009975E-05	1.127945E-05	-1.834181E-06	2.210673E-08	1.039035E-08	-4.346019E-06
44	G	-4.339904E-06	9.987360E-06	-1.310102E-06	5.366140E-08	-8.161833E-08	-2.737384E-06
45	G	7.358171E-06	5.353573E-06	-6.808518E-07	1.177978E-07	-5.744386E-08	-6.385269E-08
46	G	0.0	0.0	0.0	0.0	0.0	0.0
51	G	-9.459906E-05	0.0	-1.102459E-06	0.0	1.783673E-08	0.0
52	G	-7.835345E-05	7.629786E-06	-1.052043E-06	-1.230495E-06	2.149290E-08	-3.620016E-06
53	G	-3.957845E-05	1.143595E-05	-9.050172E-07	-1.433405E-06	5.912721E-08	-4.994130E-06
54	G	-2.952426E-06	9.986002E-06	-6.665523E-07	-9.242703E-08	1.113879E-07	-3.034791E-06
55	G	7.772147E-06	5.170013E-06	-3.313692E-07	3.004721E-07	5.470791E-08	8.200321E-07
56	G	0.0	0.0	0.0	0.0	0.0	0.0
61	G	-9.468609E-05	0.0	0.0	0.0	0.0	0.0
62	G	-7.836667E-05	7.674238E-06	0.0	0.0	0.0	-3.640034E-06
63	G	-3.932137E-05	1.149006E-05	0.0	0.0	0.0	-5.019078E-06
64	G	-2.377798E-06	9.992504E-06	0.0	0.0	0.0	-3.050827E-06
65	G	8.034097E-06	5.135539E-06	0.0	0.0	0.0	8.551340E-07
66	G	0.0	0.0	0.0	0.0	0.0	0.0

STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 1B) SUBCASE 3

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-1.009879E-04	0.0	-2.763722E-05	0.0	-2.028935E-06	0.0
2	G	-1.009879E-04	-5.021720E-17	-2.763722E-05	-9.820924E-18	-2.028935E-06	1.664250E-17
3	G	-1.009879E-04	-8.115761E-17	-2.763722E-05	-1.038971E-17	-2.028935E-06	2.542454E-17
4	G	-1.009879E-04	-8.141850E-17	-2.763722E-05	-1.091825E-17	-2.028935E-06	2.596664E-17
5	G	-1.009879E-04	-5.074998E-17	-2.763722E-05	-1.103345E-17	-2.028935E-06	1.745565E-17
6	G	-1.009879E-04	0.0	-2.763722E-05	0.0	-2.028935E-06	0.0
11	G	-1.156485E-04	0.0	-2.330449E-05	0.0	-1.301817E-06	0.0
12	G	-1.156485E-04	-5.249571E-17	-2.330449E-05	7.256108E-18	-1.301817E-06	1.929850E-17
13	G	-1.156485E-04	-8.416119E-17	-2.330449E-05	1.197641E-17	-1.301817E-06	2.732189E-17
14	G	-1.156485E-04	-8.433568E-17	-2.330449E-05	1.352754E-17	-1.301817E-06	2.737610E-17
15	G	-1.156485E-04	-5.285401E-17	-2.330449E-05	7.210791E-18	-1.301817E-06	2.027458E-17
16	G	-1.156485E-04	0.0	-2.330449E-05	0.0	-1.301817E-06	0.0
21	G	-1.199919E-04	0.0	-1.859169E-05	0.0	2.993078E-08	0.0
22	G	-1.199919E-04	-5.375906E-17	-1.859169E-05	2.964152E-19	2.993078E-08	2.049142E-17
23	G	-1.199919E-04	-8.612292E-17	-1.859169E-05	-9.235306E-20	2.993078E-08	2.846031E-17
24	G	-1.199919E-04	-8.615342E-17	-1.859169E-05	-1.361096E-18	2.993078E-08	2.764716E-17
25	G	-1.199919E-04	-5.396870E-17	-1.859169E-05	-4.905115E-19	2.993078E-08	2.087089E-17
26	G	-1.199919E-04	0.0	-1.859169E-05	0.0	2.993078E-08	0.0
31	G	-1.167566E-04	0.0	-1.385672E-05	0.0	8.359197E-07	0.0
32	G	-1.167566E-04	-5.429481E-17	-1.385672E-05	-4.051147E-18	8.359197E-07	2.038300E-17
33	G	-1.167566E-04	-8.712920E-17	-1.385672E-05	-6.504578E-18	8.359197E-07	2.851452E-17
34	G	-1.167566E-04	-8.733841E-17	-1.385672E-05	-5.805564E-18	8.359197E-07	2.840610E-17
35	G	-1.167566E-04	-5.452891E-17	-1.385672E-05	-1.658491E-18	8.359197E-07	2.038300E-17
36	G	-1.167566E-04	0.0	-1.385672E-05	0.0	8.359197E-07	0.0
41	G	-1.115669E-04	0.0	-9.290249E-06	0.0	2.114834E-09	0.0
42	G	-1.115669E-04	-5.438206E-17	-9.290249E-06	-2.183803E-19	2.114834E-09	1.837723E-17
43	G	-1.115669E-04	-8.746123E-17	-9.290249E-06	2.116863E-19	2.114834E-09	2.791821E-17
44	G	-1.115669E-04	-8.754001E-17	-9.290249E-06	2.614263E-20	2.114834E-09	2.786400E-17
45	G	-1.115669E-04	-5.441578E-17	-9.290249E-06	1.998319E-19	2.114834E-09	1.837723E-17
46	G	-1.115669E-04	0.0	-9.290249E-06	0.0	2.114834E-09	0.0
51	G	-1.166574E-04	0.0	-4.725764E-06	0.0	-8.100344E-07	0.0
52	G	-1.166574E-04	-5.653103E-17	-4.725764E-06	2.640413E-18	-8.100344E-07	2.200930E-17
53	G	-1.166574E-04	-9.011795E-17	-4.725764E-06	5.902814E-18	-8.100344E-07	2.976135E-17
54	G	-1.166574E-04	-8.958962E-17	-4.725764E-06	6.465826E-18	-8.100344E-07	2.905662E-17
55	G	-1.166574E-04	-5.579342E-17	-4.725764E-06	3.253030E-18	-8.100344E-07	2.043721E-17
56	G	-1.166574E-04	0.0	-4.725764E-06	0.0	-8.100344E-07	0.0
61	G	-1.196309E-04	0.0	0.0	0.0	0.0	0.0
62	G	-1.196309E-04	-5.711351E-17	0.0	0.0	0.0	2.222614E-17
63	G	-1.196309E-04	-9.071382E-17	0.0	0.0	0.0	2.986977E-17
64	G	-1.196309E-04	-9.012954E-17	0.0	0.0	0.0	2.867715E-17
65	G	-1.196309E-04	-5.615127E-17	0.0	0.0	0.0	2.087089E-17
66	G	-1.196309E-04	0.0	0.0	0.0	0.0	0.0

FIRST TWO LOADS COMBINED (ARCH PROBLEM) SUBCOM 5

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-3.252596E-04	0.0	-3.313885E-05	0.0	6.082799E-07	0.0
2	G	-2.855581E-04	2.357456E-05	-3.191747E-05	4.964664E-06	1.675320E-07	-7.893294E-06
3	G	-1.844355E-04	3.775066E-05	-2.838546E-05	8.233091E-06	-8.559026E-07	-1.204528E-05
4	G	-6.956945E-05	3.724984E-05	-2.270710E-05	8.410592E-06	-1.748647E-06	-1.025857E-05
5	G	-3.292033E-07	2.309012E-05	-1.441260E-05	-2.581476E-07	-1.538235E-06	-3.101491E-06
6	G	0.0	0.0	0.0	0.0	0.0	0.0
11	G	-3.229961E-04	0.0	-2.755168E-05	0.0	6.657431E-07	0.0
12	G	-2.860398E-04	2.204440E-05	-2.637817E-05	-4.254825E-06	2.994881E-07	-8.225629E-06
13	G	-1.912081E-04	3.492137E-05	-2.206902E-05	-6.702522E-06	-4.766118E-07	-1.283565E-05
14	G	-8.190093E-05	3.350399E-05	-1.748918E-05	-6.134303E-06	-1.321015E-06	-1.126509E-05
15	G	-1.227977E-05	1.939418E-05	-9.844679E-06	2.272107E-06	-1.608822E-06	-3.862602E-06
16	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	-3.134871E-04	0.0	-2.184924E-05	0.0	1.612021E-06	0.0
22	G	-2.790633E-04	2.039020E-05	-2.074855E-05	7.754276E-07	1.275376E-06	-7.711968E-06
23	G	-1.909474E-04	3.225650E-05	-1.760173E-05	1.045279E-06	3.981400E-07	-1.198017E-05
24	G	-8.942792E-05	3.097551E-05	-1.279064E-05	3.086348E-07	-5.419296E-07	-1.061560E-05
25	G	-2.036933E-05	1.812794E-05	-6.770418E-06	9.516751E-07	-7.020654E-07	-4.859997E-06
26	G	0.0	0.0	0.0	0.0	0.0	0.0
31	G	-2.986049E-04	0.0	-1.622877E-05	0.0	2.010830E-06	0.0
32	G	-2.669911E-04	1.883690E-05	-1.529008E-05	1.232058E-06	1.640168E-06	-7.037120E-06
33	G	-1.859912E-04	2.943845E-05	-1.266978E-05	1.657227E-06	9.179068E-07	-1.097438E-05
34	G	-9.140129E-05	2.906134E-05	-8.886269E-06	1.876131E-06	2.350501E-07	-1.005275E-05
35	G	-2.283883E-05	1.731382E-05	-4.538933E-06	1.689753E-06	1.840843E-07	-5.303039E-06
36	G	0.0	0.0	0.0	0.0	0.0	0.0
41	G	-2.844411E-04	0.0	-1.076509E-05	0.0	9.170525E-07	0.0
42	G	-2.554376E-04	1.746342E-05	-1.009343E-05	4.394873E-08	6.465061E-07	-6.037852E-06
43	G	-1.805555E-04	2.797323E-05	-8.252093E-06	1.165253E-07	2.619084E-08	-9.571077E-06
44	G	-9.081623E-05	2.752440E-05	-5.663768E-06	2.459143E-07	-4.305903E-07	-9.202336E-06
45	G	-2.224515E-05	1.666594E-05	-2.891442E-06	5.396907E-07	-3.027238E-07	-5.275209E-06
46	G	0.0	0.0	0.0	0.0	0.0	0.0
51	G	-2.836504E-04	0.0	-5.385154E-06	0.0	-2.252049E-07	0.0
52	G	-2.563846E-04	1.705994E-05	-5.042993E-06	-1.425046E-06	-3.919922E-07	-6.091188E-06
53	G	-1.854519E-04	2.749904E-05	-4.112698E-06	-2.269088E-06	-7.692012E-07	-9.757880E-06
54	G	-9.840290E-05	2.735451E-05	-2.840870E-06	-2.082876E-06	-1.020227E-06	-9.693114E-06
55	G	-2.766372E-05	1.678844E-05	-1.469613E-06	-4.705723E-08	-8.095008E-07	-6.100246E-06
56	G	0.0	0.0	0.0	0.0	0.0	0.0
61	G	-2.844329E-04	0.0	0.0	0.0	0.0	0.0
62	G	-2.578281E-04	1.690776E-05	0.0	0.0	0.0	-5.962012E-06
63	G	-1.883868E-04	2.732882E-05	0.0	0.0	0.0	-9.605674E-06
64	G	-1.022783E-04	2.732077E-05	0.0	0.0	0.0	-9.704788E-06
65	G	-3.028385E-05	1.688022E-05	0.0	0.0	0.0	-6.395615E-06
66	G	0.0	0.0	0.0	0.0	0.0	0.0

PRESSURE LOAD SUBCASE 1

L O A D V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-1.670077E+01	-1.167832E+00	0.0	0.0	0.0	0.0
2	G	-3.340154E+01	-1.278977E-13	0.0	0.0	0.0	0.0
3	G	-3.340154E+01	-4.547474E-13	0.0	0.0	0.0	0.0
4	G	-3.340154E+01	-2.842171E-14	0.0	0.0	0.0	0.0
5	G	-3.340154E+01	2.273737E-13	0.0	0.0	0.0	0.0
6	G	-1.670077E+01	1.167832E+00	0.0	0.0	0.0	0.0
11	G	-3.340154E+01	-2.335664E+00	0.0	0.0	0.0	0.0
12	G	-6.680309E+01	-2.557954E-13	0.0	0.0	0.0	0.0
13	G	-6.680309E+01	-9.094947E-13	0.0	0.0	0.0	0.0
14	G	-6.680309E+01	-5.684342E-14	0.0	0.0	0.0	0.0
15	G	-6.680309E+01	4.547474E-13	0.0	0.0	0.0	0.0
16	G	-3.340154E+01	2.335664E+00	0.0	0.0	0.0	0.0
21	G	-3.340154E+01	-2.335664E+00	0.0	0.0	0.0	0.0
22	G	-6.680309E+01	-2.557954E-13	0.0	0.0	0.0	0.0
23	G	-6.680309E+01	-9.094947E-13	0.0	0.0	0.0	0.0
24	G	-6.680309E+01	-5.684342E-14	0.0	0.0	0.0	0.0
25	G	-6.680309E+01	4.547474E-13	0.0	0.0	0.0	0.0
26	G	-3.340154E+01	2.335664E+00	0.0	0.0	0.0	0.0
31	G	-3.340154E+01	-2.335664E+00	0.0	0.0	0.0	0.0
32	G	-6.680309E+01	-2.557954E-13	0.0	0.0	0.0	0.0
33	G	-6.680309E+01	-9.094947E-13	0.0	0.0	0.0	0.0
34	G	-6.680309E+01	-5.684342E-14	0.0	0.0	0.0	0.0
35	G	-6.680309E+01	4.547474E-13	0.0	0.0	0.0	0.0
36	G	-3.340154E+01	2.335664E+00	0.0	0.0	0.0	0.0
41	G	-3.340154E+01	-2.335664E+00	0.0	0.0	0.0	0.0
42	G	-6.680309E+01	-2.557954E-13	0.0	0.0	0.0	0.0
43	G	-6.680309E+01	-9.094947E-13	0.0	0.0	0.0	0.0
44	G	-6.680309E+01	-5.684342E-14	0.0	0.0	0.0	0.0
45	G	-6.680309E+01	4.547474E-13	0.0	0.0	0.0	0.0
46	G	-3.340154E+01	2.335664E+00	0.0	0.0	0.0	0.0
51	G	-3.340154E+01	-2.335664E+00	0.0	0.0	0.0	0.0
52	G	-6.680309E+01	-2.557954E-13	0.0	0.0	0.0	0.0
53	G	-6.680309E+01	-9.094947E-13	0.0	0.0	0.0	0.0
54	G	-6.680309E+01	-5.684342E-14	0.0	0.0	0.0	0.0
55	G	-6.680309E+01	4.547474E-13	0.0	0.0	0.0	0.0
56	G	-3.340154E+01	2.335664E+00	0.0	0.0	0.0	0.0
61	G	-1.670077E+01	-1.167832E+00	0.0	0.0	0.0	0.0
62	G	-3.340154E+01	-1.278977E-13	0.0	0.0	0.0	0.0
63	G	-3.340154E+01	-4.547474E-13	0.0	0.0	0.0	0.0
64	G	-3.340154E+01	-2.842171E-14	0.0	0.0	0.0	0.0
65	G	-3.340154E+01	2.273737E-13	0.0	0.0	0.0	0.0
66	G	-1.670077E+01	1.167832E+00	0.0	0.0	0.0	0.0

STATIC STRESS ANALYSIS OF ARCH

GRAVITY LOAD SUBCASE 2

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-5.892700E+00	0.0	0.0	0.0	-2.887127E-01	0.0
2	G	-1.167070E+01	1.640211E+00	0.0	-8.036208E-02	-5.718059E-01	-4.821725E-01
3	G	-1.132885E+01	3.248496E+00	0.0	-1.591600E-01	-5.550569E-01	-9.549600E-01
4	G	-1.076650E+01	4.793554E+00	0.0	-2.348600E-01	-5.275043E-01	-1.409160E+00
5	G	-9.994585E+00	6.245310E+00	0.0	-3.059888E-01	-4.896845E-01	-1.835933E+00
6	G	-4.514070E+00	3.787754E+00	0.0	-1.855809E-01	-2.211667E-01	-1.113486E+00
11	G	-9.475698E+00	0.0	0.0	0.0	0.0	0.0
12	G	-1.876696E+01	2.637525E+00	0.0	0.0	0.0	0.0
13	G	-1.821725E+01	5.223713E+00	0.0	0.0	0.0	0.0
14	G	-1.731296E+01	7.708227E+00	0.0	0.0	0.0	0.0
15	G	-1.607170E+01	1.004271E+01	0.0	0.0	0.0	0.0
16	G	-7.258806E+00	6.090861E+00	0.0	0.0	0.0	0.0
21	G	-9.475698E+00	0.0	0.0	0.0	0.0	0.0
22	G	-1.876696E+01	2.637525E+00	0.0	0.0	0.0	0.0
23	G	-1.821725E+01	5.223713E+00	0.0	0.0	0.0	0.0
24	G	-1.731296E+01	7.708227E+00	0.0	0.0	0.0	0.0
25	G	-1.607170E+01	1.004271E+01	0.0	0.0	0.0	0.0
26	G	-7.258806E+00	6.090861E+00	0.0	0.0	0.0	0.0
31	G	-9.475698E+00	0.0	0.0	0.0	0.0	0.0
32	G	-1.876696E+01	2.637525E+00	0.0	0.0	0.0	0.0
33	G	-1.821725E+01	5.223713E+00	0.0	0.0	0.0	0.0
34	G	-1.731296E+01	7.708227E+00	0.0	0.0	0.0	0.0
35	G	-1.607170E+01	1.004271E+01	0.0	0.0	0.0	0.0
36	G	-7.258806E+00	6.090861E+00	0.0	0.0	0.0	0.0
41	G	-1.063055E+01	0.0	0.0	0.0	0.0	0.0
42	G	-2.105419E+01	2.958973E+00	0.0	0.0	0.0	-4.821725E-01
43	G	-2.043748E+01	5.860353E+00	0.0	0.0	0.0	-9.549600E-01
44	G	-1.942298E+01	8.647667E+00	0.0	0.0	0.0	-1.409160E+00
45	G	-1.803043E+01	1.126667E+01	0.0	0.0	0.0	-1.835933E+00
46	G	-8.143473E+00	6.833185E+00	0.0	0.0	0.0	-1.113486E+00
51	G	-9.475698E+00	0.0	0.0	0.0	0.0	0.0
52	G	-1.876696E+01	2.637525E+00	0.0	0.0	0.0	0.0
53	G	-1.821725E+01	5.223713E+00	0.0	0.0	0.0	0.0
54	G	-1.731296E+01	7.708227E+00	0.0	0.0	0.0	0.0
55	G	-1.607170E+01	1.004271E+01	0.0	0.0	0.0	0.0
56	G	-7.258806E+00	6.090861E+00	0.0	0.0	0.0	0.0
61	G	-4.737849E+00	0.0	0.0	0.0	0.0	0.0
62	G	-9.383481E+00	1.318762E+00	0.0	0.0	0.0	0.0
63	G	-9.108625E+00	2.611856E+00	0.0	0.0	0.0	0.0
64	G	-8.656481E+00	3.854114E+00	0.0	0.0	0.0	0.0
65	G	-8.035848E+00	5.021355E+00	0.0	0.0	0.0	0.0
66	G	-3.629403E+00	3.045431E+00	0.0	0.0	0.0	0.0

STATIC STRESS ANALYSIS OF ARCH

FIRST TWO LOADS COMBINED (ARCH PROBLEM) SUBCOM 5

L O A D V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-2.259347E+01	-1.167832E+00	0.0	0.0	-2.867127E-01	0.0
2	G	-4.507225E+01	1.640211E+00	0.0	-8.036208E-02	-5.718059E-01	-4.821725E-01
3	G	-4.473040E+01	3.248496E+00	0.0	-1.591600E-01	-5.550569E-01	-9.549600E-01
4	G	-4.416804E+01	4.793554E+00	0.0	-2.348600E-01	-5.275043E-01	-1.409160E+00
5	G	-4.329613E+01	6.245310E+00	0.0	-3.0[illegible]588E-01	-4.896845E-01	-1.835933E+00
6	G	-2.121484E+01	4.355586E+00	0.0	[illegible]609E-01	-2.211667E-01	-1.113486E+00
11	G	-4.287724E+01	-2.335664E+00	0.0	0.0	0.0	0.0
12	G	-8.557005E+01	2.637525E+00	0.0	0.0	0.0	0.0
13	G	-8.502034E+01	5.223713E+00	0.0	0.0	0.0	0.0
14	G	-8.411605E+01	7.708227E+00	0.0	0.0	0.0	0.0
15	G	-8.287478E+01	1.004271E+01	0.0	0.0	0.0	0.0
16	G	-4.066035E+01	8.426525E+00	0.0	0.0	0.0	0.0
21	G	-4.287724E+01	-2.335664E+00	0.0	0.0	0.0	0.0
22	G	-8.557005E+01	2.637525E+00	0.0	0.0	0.0	0.0
23	G	-8.502034E+01	5.223713E+00	0.0	0.0	0.0	0.0
24	G	-8.411605E+01	7.708227E+00	0.0	0.0	0.0	0.0
25	G	-8.287478E+01	1.004271E+01	0.0	0.0	0.0	0.0
26	G	-4.066035E+01	8.426525E+00	0.0	0.0	0.0	0.0
31	G	-4.287724E+01	-2.335664E+00	0.0	0.0	0.0	0.0
32	G	-8.557005E+01	2.637525E+00	0.0	0.0	0.0	0.0
33	G	-8.502034E+01	5.223713E+00	0.0	0.0	0.0	0.0
34	G	-8.411605E+01	7.708227E+00	0.0	0.0	0.0	0.0
35	G	-8.287478E+01	1.004271E+01	0.0	0.0	0.0	0.0
36	G	-4.066035E+01	8.426525E+00	0.0	0.0	0.0	0.0
41	G	-4.403209E+01	-2.335664E+00	0.0	0.0	0.0	0.0
42	G	-8.785727E+01	2.958373E+00	0.0	0.0	0.0	-4.821725E-01
43	G	-8.724057E+01	5.860353E+00	0.0	0.0	0.0	-9.549600E-01
44	G	-8.622607E+01	8.647667E+00	0.0	0.0	0.0	-1.409160E+00
45	G	-8.483352E+01	1.126567E+01	0.0	0.0	0.0	-1.835933E+00
46	G	-4.154502E+01	9.168848E+00	0.0	0.0	0.0	-1.113486E+00
51	G	-4.287724E+01	-2.335664E+00	0.0	0.0	0.0	0.0
52	G	-8.557005E+01	2.637525E+00	0.0	0.0	0.0	0.0
53	G	-8.502034E+01	5.223713E+00	0.0	0.0	0.0	0.0
54	G	-8.411605E+01	7.708227E+00	0.0	0.0	0.0	0.0
55	G	-8.287478E+01	1.004271E+01	0.0	0.0	0.0	0.0
56	G	-4.066035E+01	8.426525E+00	0.0	0.0	0.0	0.0
61	G	-2.143862E+01	-1.167832E+00	0.0	0.0	0.0	0.0
62	G	-4.278593E+01	1.318762E+00	0.0	0.0	0.0	0.0
63	G	-4.251017E+01	2.611856E+00	0.0	0.0	0.0	0.0
64	G	-4.205803E+01	3.854114E+00	0.0	0.0	0.0	0.0
65	G	-4.143739E+01	5.021355E+00	0.0	0.0	0.0	0.0
66	G	-2.033018E+01	4.213262E+00	0.0	0.0	0.0	0.0

PRESSURE LOAD SUBCASE 1

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	[illegible]	0.0	-7.053922E+00	0.0	-2.760247E+01
6	G	-1.350937E+01	[illegible]	1.348856E+02	1.906489E+01	3.992810E-01	1.145139E+02
11	G	0.0	[illegible]	0.0	-4.014566E-13	0.0	1.221401E+01
16	G	2.876731E+00	[illegible]	7.180953E+01	-1.238636E-01	-1.771332E+00	1.480613E+01
21	G	0.0	4.820367E+02	0.0	-1.509903E-12	0.0	1.146503E+01
26	G	5.177262E+00	-4.470319E+02	5.145966E+01	[illegible]	-7.056866E-01	2.524103E+01
31	G	0.0	4.703087E+02	0.0	[illegible]	0.0	8.422449E+00
36	G	6.003936E+00	-4.334471E+02	3.012638E+01	-1.619788E-01	-2.316405E+00	2.927077E+01
41	G	0.0	4.923689E+02	0.0	3.203542E-03	0.0	-5.118916E+01
46	G	5.371977E+00	-4.875136E+02	2.358457E+01	-8.819043E-02	-5.864632E-02	1.591055E+02
51	G	0.0	4.720149E+02	0.0	-1.604050E-12	0.0	5.908512E+00
56	G	6.832024E+00	-4.327370E+02	1.811879E+01	1.384879E-01	1.980470E+00	3.436843E+01
61	G	0.0	2.418853E+02	-6.378167E+00	-6.547234E-02	9.362981E-01	3.208634E+00
62	G	0.0	0.0	-2.231368E+01	1.556087E-02	2.382199E+00	0.0
63	G	0.0	0.0	-4.744747E+01	1.598563E-02	3.557082E+00	0.0
64	G	0.0	0.0	-7.861177E+01	1.827930E-02	3.704730E+00	0.0
65	G	0.0	0.0	-1.058307E+02	2.904116E-01	-2.654793E+00	0.0
66	G	3.636002E+00	-2.213707E+02	-6.940266E+01	-1.134756E-01	-1.622777E+00	1.816421E+01

PRESSURE LOAD SUBCASE 1

F O R C E S I N B A R E L E M E N T S (C B A R)

ELEMENT	BEND-MOMENT END-A		BEND-MOMENT END-B		- SHEAR -		AXIAL	
ID.	PLANE 1	PLANE 2	PLANE 1	PLANE 2	PLANE 1	PLANE 2	FORCE	TORQUE
101	7.306239E+00	3.451717E-01	4.048871E+00	-7.108862E-01	3.9[illegible]1135E-01	1.293949E-01	-2.958180E+01	-2.865282E-02
102	8.273204E+00	1.338125E+00	-1.270455E+00	-1.680782E+00	1.169350E+00	3.698958E-01	-3.813125E+01	-6.097257E-02
103	6.711361E+00	2.075175E+00	-7.486757E+00	-2.319966E+00	1.739644E+00	5.385208E-01	-5.389144E+01	-2.173504E-02
104	1.552264E+00	1.792041E+00	-1.118962E+01	-1.358543E+00	1.561217E+00	3.860297E-01	-7.132793E+01	9.509480E-02
105	-7.230267E+00	4.362963E-02	-7.148346E-01	3.625859E-01	-7.983123E-01	-3.908055E-02	-7.742910E+01	2.036873E-01
141	3.622760E+00	3.216004E-03	3.309483E+00	4.810741E-03	3.838464E-02	-1.953974E-04	-4.195017E+01	-2.180603E-02
142	3.570569E+00	-5.707525E-03	2.300057E+00	2.419866E-03	1.556712E-01	-9.958199E-04	-4.353340E+01	-4.908932E-02
143	3.371403E+00	-2.125062E-02	-3.333114E-01	2.746457E-03	4.539253E-01	-2.940276E-03	-4.827662E+01	-3.426563E-02
144	2.738970E+00	-1.283885E-02	-5.810635E+00	-2.858888E-02	1.047552E+00	1.929795E-03	-5.948399E+01	1.457567E-02
145	-1.322114E+00	-2.073194E-02	-1.144718E+01	8.256038E-02	1.240588E+00	-1.265603E-02	-7.773501E+01	2.731315E-02

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STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD SUBCASE 1

F O R C E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)

ELEMENT ID.	BEND-MOMENT X	BEND-MOMENT Y	TWIST-MOMENT	SHEAR X	SHEAR Y
1	1.480494E+00	4.555965E-01	-1.401618E-01	1.077680E-01	-1.418942E-01
2	9.840189E-01	3.600253E-01	-3.591295E-01	3.141598E-01	-1.523763E-01
3	7.341273E-02	1.722671E-01	-3.620126E-01	4.676446E-01	-1.537815E-01
4	-1.026289E+00	-6.663521E-02	-5.448136E-02	4.325655E-01	-1.006268E-01
5	-1.336195E+00	-3.424251E-01	5.042840E-01	-1.504988E-01	1.017881E-01
11	1.443514E+00	7.514042E-01	-6.512785E-02	1.304327E-02	1.092762E-01
12	1.048912E+00	6.496946E-01	-1.631880E-01	3.736154E-02	8.727434E-02
13	3.245124E-01	4.390721E-01	-1.594053E-01	6.099303E-02	2.849364E-02
14	-5.865507E-01	1.005778E-01	5.107003E-02	9.535194E-02	-7.239947E-02
15	-1.753590E+00	-3.580956E-01	2.548178E-01	2.336557E-01	9.505511E-02
21	1.193801E+00	4.722657E-01	-6.476283E-02	1.271103E-02	1.742508E-02
22	9.112526E-01	4.407614E-01	-1.581753E-01	3.407839E-02	-9.036573E-03
23	4.201613E-01	3.968326E-01	-1.548416E-01	3.890230E-02	-5.429413E-02
24	-2.354890E-01	2.082994E-01	-4.531952E-02	5.013387E-02	-6.301182E-02
25	-1.972172E+00	-4.596424E-01	2.897003E-02	3.621179E-01	1.551517E-02
31	9.002302E-01	-2.688843E-02	-4.882180E-02	1.638352E-02	1.575894E-01
32	7.056620E-01	-8.191345E-02	-8.985778E-02	5.770901E-02	1.579831E-01
33	3.027214E-01	-1.991118E-01	-1.139654E-02	1.289781E-01	1.846957E-01
34	-3.865034E-01	-3.370146E-01	4.167625E-02	2.589577E-01	1.970122E-01
35	-1.912246E+00	-6.555210E-01	-3.876512E-02	4.429216E-01	6.446228E-02
41	7.704980E-01	-6.998507E-02	-5.781782E-02	7.689182E-03	-1.095955E-01
42	6.755742E-01	-8.183778E-02	-1.537087E-01	3.549748E-02	-1.507854E-01
43	4.262561E-01	-1.393368E-01	-1.638840E-01	1.106708E-01	-2.336580E-01
44	-2.296686E-01	-2.719588E-01	1.995776E-02	2.756009E-01	-2.549940E-01
45	-2.019814E+00	-6.940310E-01	1.659009E-01	4.909236E-01	-2.189340E-02
51	8.209805E-01	3.507471E-01	-2.269091E-02	-7.523267E-03	2.846296E-02
52	8.139410E-01	4.447310E-01	-5.344536E-02	-2.120856E-02	2.390308E-02
53	7.550077E-01	5.445838E-01	-2.847157E-02	-1.466257E-02	1.663183E-02
54	2.375708E-01	3.644522E-01	7.845861E-02	9.074453E-02	5.285962E-04
55	-2.282276E+00	-5.537669E-01	1.078833E-01	5.200483E-01	2.885344E-02

STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD SUBCASE 1

S T R E S S E S I N B A R E L E M E N T S (C B A R)

ELEMENT ID.	SA1 / SB1	SA2 / SB2	SA3 / SB3	SA4 / SB4	AXIAL STRESS	SA-MAX / SB-MAX	SA-MIN / SB-MIN	M.S.-T / M.S.-C
101	1.777819E+01	2.606363E+01	0.0	0.0	-2.958180E+01	-3.518169E+00	-2.958180E+01	
	2.067983E+01	3.615829E+00	0.0	0.0		-8.901973E+00	-2.958180E+01	
102	8.762021E+00	4.088217E+01	0.0	0.0	-3.813125E+01	2.750919E+00	-3.813125E+01	
	1.636086E+01	-2.398437E+01	0.0	0.0		-2.177039E+01	-6.211561E+01	
103	-4.769490E+00	4.504218E+01	0.0	0.0	-5.389144E+01	-8.849261E+00	-5.866143E+01	
	5.381531E+00	-5.030657E+01	0.0	0.0		-4.950991E+01	-1.041980E+02	
104	-1.685068E+01	2.616520E+01	0.0	0.0	-7.132793E+01	-4.516273E+01	-8.617861E+01	
	-1.726711E+01	-4.987735E+01	0.0	0.0		-7.132793E+01	-1.212053E+02	
105	-2.221661E+01	-2.116933E+01	0.0	0.0	-7.742910E+01	-7.742910E+01	-9.964571E+01	
	-6.496445E+00	2.207008E+00	0.0	0.0		-7.522209E+01	-8.392555E+01	
141	1.083077E+01	1.090796E+01	0.0	0.0	-4.195017E+01	-3.104221E+01	-4.195017E+01	
	9.871705E+00	9.987181E+00	0.0	0.0		-3.196299E+01	-4.195017E+01	
142	1.078128E+01	1.064428E+01	0.0	0.0	-4.353340E+01	-3.275213E+01	-4.353340E+01	
	6.871819E+00	6.929905E+00	0.0	0.0		-3.660350E+01	-4.353340E+01	
143	1.037027E+01	9.860172E+00	0.0	0.0	-4.827662E+01	-3.790635E+01	-4.827662E+01	
	-1.032997E+00	-9.670713E-01	0.0	0.0		-4.827662E+01	-4.930961E+01	
144	8.371622E+00	8.063640E+00	0.0	0.0	-5.948399E+01	-5.111216E+01	-5.948399E+01	
	-1.709053E+01	-1.777677E+01	0.0	0.0		-5.948399E+01	-7.726076E+01	
145	-3.717915E+00	-4.215561E+00	0.0	0.0	-7.773501E+01	-7.773501E+01	-8.195057E+01	
	-3.533586E+01	-3.335410E+01	0.0	0.0		-7.773501E+01	-1.130709E+02	

PRESSURE LOAD SUBCASE 1

S T R E S S E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAX SHEAR
1	-5.000000E-01	-4.569984E+01	2.495382E+00	-7.014837E-01	-89.1663	2.505590E+00	-4.571005E+01	2.410782E+01
	5.000000E-01	-6.346577E+01	-2.971739E+00	9.604578E-01	89.0717	-2.955913E+00	-6.348166E+01	3.026287E+01
2	-5.000000E-01	-4.811169E+01	1.733010E+00	-1.512974E+00	-88.2647	1.828846E+00	-4.815752E+01	2.499318E+01
	5.000000E-01	-5.991941E+01	-2.609330E+00	2.796580E+00	87.2130	-2.473189E+00	-6.005605E+01	2.879143E+01
3	-5.000000E-01	-5.307322E+01	1.362709E-01	-4.372480E-01	-89.5292	1.398637E-01	-5.307681E+01	2.660834E+01
	5.000000E-01	-5.395417E+01	-1.931174E+00	4.146905E+00	85.4709	-1.602687E+00	-5.428266E+01	2.633999E+01
4	-5.000000E-01	-6.087767E+01	-3.028849E+00	4.264926E+00	85.8060	-2.717101E+00	-6.119042E+01	2.923666E+01
	5.000000E-01	-4.856220E+01	-2.228626E+00	4.918703E+00	84.0064	-1.713209E+00	-4.907861E+01	2.368270E+01
5	-5.000000E-01	-6.913379E+01	-1.396486E+01	1.453792E+01	76.0993	-1.039190E+01	-7.273175E+01	3.116992E+01
	5.000000E-01	-5.309945E+01	-9.880759E+00	8.485507E+00	79.2794	-8.274063E+00	-5.470615E+01	2.321604E+01
11	-5.000000E-01	-4.998303E+01	3.858411E+00	-2.325558E-01	-89.7525	3.859415E+00	-4.998404E+01	2.692173E+01
	5.000000E-01	-6.730520E+01	-5.158440E+00	5.489784E-01	89.4939	-5.153591E+00	-6.731005E+01	3.107823E+01
12	-5.000000E-01	-5.235935E+01	2.491707E+00	-2.069282E-01	-89.7639	2.492487E+00	-5.236011E+01	2.742630E+01
	5.000000E-01	-6.494627E+01	-5.304689E+00	1.751326E+00	88.3195	-5.253307E+00	-6.499766E+01	2.987217E+01
13	-5.000000E-01	-5.677684E+01	-4.964527E-01	1.332558E+00	88.6444	-4.649192E-01	-5.680838E+01	2.817173E+01
	5.000000E-01	-6.067099E+01	-5.765318E+00	3.245422E+00	86.6289	-5.574149E+00	-6.086216E+01	2.764401E+01
14	-5.000000E-01	-6.234263E+01	-5.968958E+00	5.485133E+00	84.4940	-5.440216E+00	-6.287137E+01	2.871558E+01
	5.000000E-01	-5.528002E+01	-7.175891E+00	4.872293E+00	84.2742	-6.687356E+00	-5.576856E+01	2.454060E+01
15	-5.000000E-01	-6.827417E+01	-1.508122E+01	9.970257E+00	79.7252	-1.327385E+01	-7.008154E+01	2.840384E+01
	5.000000E-01	-4.723108E+01	-1.075408E+01	6.912444E+00	79.6138	-9.517122E+00	-4.849604E+01	1.949046E+01
21	-5.000000E-01	-5.196023E+01	1.653177E+00	-1.848591E-01	-89.8024	1.653815E+00	-5.196087E+01	2.680734E+01
	5.000000E-01	-6.628584E+01	-4.014011E+00	5.912348E-01	89.4551	-4.008378E+00	-6.629147E+01	3.114155E+01
22	-5.000000E-01	-5.364976E+01	2.192355E-01	-9.991111E-02	-89.8937	2.194208E-01	-5.364995E+01	2.693468E+01
	5.000000E-01	-6.458479E+01	-5.069937E+00	1.798193E+00	88.2710	-5.015655E+00	-6.463907E+01	2.981171E+01
23	-5.000000E-01	-5.642723E+01	-2.551996E+00	1.166583E+00	88.7601	-2.526747E+00	-5.645248E+01	2.696287E+01
	5.000000E-01	-6.146917E+01	-7.313988E+00	3.024682E+00	86.8131	-7.145577E+00	-6.163758E+01	2.724600E+01
24	-5.000000E-01	-5.954482E+01	-7.417588E+00	3.642202E+00	86.0224	-7.164333E+00	-5.979807E+01	2.631687E+01
	5.000000E-01	-5.671805E+01	-9.917073E+00	4.186036E+00	84.9290	-9.545615E+00	-5.709041E+01	2.377240E+01
25	-5.000000E-01	-6.796834E+01	-1.633177E+01	5.663965E+00	83.8063	-1.577709E+01	-6.858302E+01	2.640296E+01
	5.000000E-01	-4.430228E+01	-1.087600E+01	5.316324E+00	81.1772	-1.005089E+01	-4.512745E+01	1.753828E+01
31	-5.000000E-01	-5.219732E+01	-1.854979E+00	-1.159811E-01	-89.8680	-1.854712E+00	-5.219759E+01	2.517144E+01
	5.000000E-01	-6.300009E+01	-1.532313E+00	4.698806E-01	89.5620	-1.528722E+00	-6.300368E+01	3.073748E+01

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STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD SUBCASE 1

S T R E S S E S   I N   G E N E R A L   Q U A D R I L A T E R A L   E L E M E N T S   (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAX SHEAR
32	-5.000000E-01	-5.318021E+01	-3.712891E+00	1.645030E-01	89.8095	-3.712344E+00	-5.318075E+01	2.473421E+01
	5.000000E-01	-6.164815E+01	-2.729924E+00	1.242796E+00	88.7921	-2.703720E+00	-6.167436E+01	2.948532E+01
33	-5.000000E-01	-5.507420E+01	-7.223246E+00	1.455937E+00	88.2586	-7.184983E+00	-5.511847E+01	2.396674E+01
	5.000000E-01	-5.870686E+01	-4.839404E+00	1.596296E+00	88.3041	-4.792641E+00	-5.875412E+01	2.698074E+01
34	-5.000000E-01	-5.801426E+01	-1.178651E+01	2.634213E+00	86.7491	-1.163689E+01	-5.816388E+01	2.326350E+01
	5.000000E-01	-5.337622E+01	-7.742336E+00	2.134098E+00	87.3283	-7.642751E+00	-5.347580E+01	2.291653E+01
35	-5.000000E-01	-6.498037E+01	-1.765809E+01	3.046028E+00	86.3298	-1.746257E+01	-6.517639E+01	2.385691E+01
	5.000000E-01	-4.203342E+01	-9.791800E+00	3.513209E+00	83.8530	-9.413429E+00	-4.241229E+01	1.649943E+01
41	-5.000000E-01	-5.306852E+01	-2.508668E+00	-2.345025E-01	-89.7343	-2.507581E+00	-5.306960E+01	2.528101E+01
	5.000000E-01	-6.231449E+01	-1.668847E+00	4.593114E-01	89.5661	-1.665369E+00	-6.231797E+01	3.032630E+01
42	-5.000000E-01	-5.337890E+01	-4.338912E+00	-4.048243E-01	-89.5271	-4.335571E+00	-5.338224E+01	2.452333E+01
	5.000000E-01	-6.148579E+01	-3.356859E+00	1.439680E+00	88.5821	-3.321224E+00	-6.152142E+01	2.910010E+01
43	-5.000000E-01	-5.419286E+01	-7.699445E+00	3.769038E-01	89.5356	-7.696390E+00	-5.419591E+01	2.324976E+01
	5.000000E-01	-5.930805E+01	-6.027403E+00	2.343512E+00	87.4864	-5.924524E+00	-5.941093E+01	2.674320E+01
44	-5.000000E-01	-5.679631E+01	-1.210407E+01	2.588497E+00	86.6963	-1.195464E+01	-5.694573E+01	2.249555E+01
	5.000000E-01	-5.404029E+01	-8.840560E+00	2.349004E+00	87.0330	-8.718812E+00	-5.416204E+01	2.272161E+01
45	-5.000000E-01	-6.543473E+01	-1.814828E+01	3.817045E+00	85.4145	-1.784215E+01	-6.574087E+01	2.394936E+01
	5.000000E-01	-4.119696E+01	-9.819924E+00	1.826234E+00	86.6802	-9.713990E+00	-4.130289E+01	1.579445E+01
51	-5.000000E-01	-5.443626E+01	-1.910758E-01	-1.134926E-01	-89.8801	-1.908384E-01	-5.443650E+01	2.712283E+01
	5.000000E-01	-6.428803E+01	-4.400041E+00	1.587984E-01	89.8481	-4.399620E+00	-6.428845E+01	2.994441E+01
52	-5.000000E-01	-5.428157E+01	-1.583745E+00	-1.722969E-01	-89.8127	-1.583181E+00	-5.428213E+01	2.634947E+01
	5.000000E-01	-6.404883E+01	-6.920517E+00	4.690474E-01	89.5296	-6.916666E+00	-6.405271E+01	2.856802E+01
53	-5.000000E-01	-5.400040E+01	-4.200384E+00	2.877588E-01	89.6689	-4.198722E+00	-5.400206E+01	2.490167E+01
	5.000000E-01	-6.306049E+01	-1.073539E+01	6.294177E-01	89.3109	-1.072782E+01	-6.306806E+01	2.617012E+01
54	-5.000000E-01	-5.575550E+01	-8.756511E+00	1.325582E+00	88.3857	-8.719153E+00	-5.579286E+01	2.353685E+01
	5.000000E-01	-5.860635E+01	-1.312994E+01	3.840786E-01	89.5161	-1.312669E+01	-5.860959E+01	2.274145E+01
55	-5.000000E-01	-6.901506E+01	-1.778482E+01	1.667600E+00	88.1376	-1.773059E+01	-6.906928E+01	2.566935E+01
	5.000000E-01	-4.162775E+01	-1.113961E+0	3.730001E-01	89.2992	-1.113505E+01	-4.163231E+01	1.524863E+01

AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 1B) SUBCASE 3

S T R E S S E S I N B A R E L E M E N T S (C B A R)

ELEMENT ID.	SA1 / SB1	SA2 / SB2	SA3 / SB3	SA4 / SB4	AXIAL STRESS	SA-MAX / SB-MAX	SA-MIN / SB-MIN	M.S.-T / M.S.-C
101	2.601199E-01	-2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01	-5.230889E+01	
	2.601199E-01	-2.601199E-01	0.0	0.0		-5.178865E+01	-5.230889E+01	
102	2.601199E-01	-2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01	-5.230889E+01	
	2.601199E-01	-2.601199E-01	0.0	0.0		-5.178865E+01	-5.230889E+01	
103	2.601199E-01	-2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01	-5.230889E+01	
	2.601199E-01	-2.601199E-01	0.0	0.0		-5.178665E+01	-5.230889E+01	
104	2.601199E-01	-2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01	-5.230889E+01	
	2.601199E-01	-2.601199E-01	0.0	0.0		-5.178865E+01	-5.230889E+01	
105	2.601199E-01	-2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01	-5.230889E+01	
	2.601199E-01	-2.601199E-01	0.0	0.0		-5.178865E+01	-5.230889E+01	
141	-2.711327E-04	2.711325E-04	0.0	0.0	-5.721378E+01	-5.721350E+01	-5.721405E+01	
	-2.711326E-04	2.711325E-04	0.0	0.0		-5.721350E+01	-5.721405E+01	
142	-2.711327E-04	2.711325E-04	0.0	0.0	-5.721378E+01	-5.721350E+01	-5.721405E+01	
	-2.711326E-04	2.711326E-04	0.0	0.0		-5.721350E+01	-5.721405E+01	
143	-2.711326E-04	2.711325E-04	0.0	0.0	-5.721378E+01	-5.721350E+01	-5.721405E+01	
	-2.711325E-04	2.711326E-04	0.0	0.0		-5.721350E+01	-5.721405E+01	
144	-2.711326E-04	2.711326E-04	0.0	0.0	-5.721378E+01	-5.721350E+01	-5.721405E+01	
	-2.711325E-04	2.711327E-04	0.0	0.0		-5.721350E+01	-5.721405E+01	
145	-2.711326E-04	2.711326E-04	0.0	0.0	-5.721378E+01	-5.721350E+01	-5.721405E+01	
	-2.711325E-04	2.711327E-04	0.0	0.0		-5.721350E+01	-5.721405E+01	

STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 1B) SUBCASE 3

S T R E S S E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAX SHEAR
1	-5.000000E-01	-5.371072E+01	1.494533E+00	-1.023182E-12	-90.0000	1.494533E+00	-5.371072E+01	2.760263E+01
	5.000000E-01	-5.460744E+01	-1.494533E+00	-1.023182E-12	-90.0000	-1.494533E+00	-5.460744E+01	2.655645E+01
2	-5.000000E-01	-5.371072E+01	1.494533E+00	7.958079E-13	90.0000	1.494533E+00	-5.371072E+01	2.760263E+01
	5.000000E-01	-5.460744E+01	-1.494533E+00	-6.707523E-12	-90.0000	-1.494533E+00	-5.460744E+01	2.655645E+01
3	-5.000000E-01	-5.371072E+01	1.494533E+00	7.958079E-13	90.0000	1.494533E+00	-5.371072E+01	2.760263E+01
	5.000000E-01	-5.460744E+01	-1.494533E+00	-5.343281E-12	-90.0000	-1.494533E+00	-5.460744E+01	2.655645E+01
4	-5.000000E-01	-5.371072E+01	1.494533E+00	-7.958079E-13	-90.0000	1.494533E+00	-5.371072E+01	2.760263E+01
	5.000000E-01	-5.460744E+01	-1.494533E+00	-5.570655E-12	-90.0000	-1.494533E+00	-5.460744E+01	2.655645E+01
5	-5.000000E-01	-5.371072E+01	1.494533E+00	7.958079E-13	90.0000	1.494533E+00	-5.371072E+01	2.760263E+01
	5.000000E-01	-5.460744E+01	-1.494533E+00	-2.614797E-12	-90.0000	-1.494533E+00	-5.460744E+01	2.655645E+01
11	-5.000000E-01	-5.808889E+01	2.737303E+00	-1.250555E-12	-90.0000	2.737303E+00	-5.808889E+01	3.041310E+01
	5.000000E-01	-5.973127E+01	-2.737303E+00	-5.684342E-13	-90.0000	-2.737303E+00	-5.973127E+01	2.849698E+01
12	-5.000000E-01	-5.808889E+01	2.737303E+00	-2.160050E-12	-90.0000	2.737303E+00	-5.808889E+01	3.041310E+01
	5.000000E-01	-5.973127E+01	-2.737303E+00	-1.477929E-12	-90.0000	-2.737303E+00	-5.973127E+01	2.849698E+01
13	-5.000000E-01	-5.808889E+01	2.737303E+00	-4.092726E-12	-90.0000	2.737303E+00	-5.808889E+01	3.041310E+01
	5.000000E-01	-5.973127E+01	-2.737303E+00	1.364242E-12	90.0000	-2.737303E+00	-5.973127E+01	2.849698E+01
14	-5.000000E-01	-5.808889E+01	2.737303E+00	-2.387424E-12	-90.0000	2.737303E+00	-5.808889E+01	3.041310E+01
	5.000000E-01	-5.973127E+01	-2.737303E+00	-3.410605E-13	-90.0000	-2.737303E+00	-5.973127E+01	2.849698E+01
15	-5.000000E-01	-5.808889E+01	2.737303E+00	1.023182E-12	90.0000	2.737303E+00	-5.808889E+01	3.041310E+01
	5.000000E-01	-5.973127E+01	-2.737303E+00	-1.023182E-12	-90.0000	-2.737303E+00	-5.973127E+01	2.849698E+01
21	-5.000000E-01	-5.869012E+01	1.656646E+00	3.979039E-13	90.0000	1.656646E+00	-5.869012E+01	3.017338E+01
	5.000000E-01	-5.968410E+01	-1.656646E+00	-1.648459E-12	-90.0000	-1.656646E+00	-5.968410E+01	2.901373E+01
22	-5.000000E-01	-5.869012E+01	1.656646E+00	2.842171E-13	90.0000	1.656646E+00	-5.869012E+01	3.017338E+01
	5.000000E-01	-5.968410E+01	-1.656646E+00	-1.080025E-12	-90.0000	-1.656646E+00	-5.968410E+01	2.901373E+01
23	-5.000000E-01	-5.869012E+01	1.656646E+00	-2.330580E-12	-90.0000	1.656646E+00	-5.869012E+01	3.017338E+01
	5.000000E-01	-5.968410E+01	-1.656646E+00	3.979039E-13	90.0000	-1.656646E+00	-5.968410E+01	2.901373E+01
24	-5.000000E-01	-5.869012E+01	1.656646E+00	-2.444267E-12	-90.0000	1.656646E+00	-5.869012E+01	3.017338E+01
	5.000000E-01	-5.968410E+01	-1.656646E+00	9.663381E-13	90.0000	-1.656646E+00	-5.968410E+01	2.901373E+01
25	-5.000000E-01	-5.869012E+01	1.656646E+00	1.477929E-12	90.0000	1.656646E+00	-5.869012E+01	3.017338E+01
	5.000000E-01	-5.968410E+01	-1.656646E+00	-1.250555E-12	-90.0000	-1.656646E+00	-5.968410E+01	2.901373E+01
31	-5.000000E-01	-5.759500E+01	-1.713819E+00	-1.136868E-13	-90.0000	-1.713819E+00	-5.759500E+01	2.794059E+01
	5.000000E-01	-5.656671E+01	1.713819E+00	-1.136868E-13	-90.0000	1.713819E+00	-5.656671E+01	2.914027E+01

STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 1B) SUECASE 3

S T R E S S E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAX SHEAR
32	-5.000000E-01	-5.759500E+01	-1.713819E+00	-1.705303E-12	-90.0000	-1.713819E+00	-5.759500E+01	2.794059E+01
	5.000000E-01	-5.656671E+01	1.713819E+00	2.387424E-12	90.0000	1.713819E+00	-5.656671E+01	2.914027E+01
33	-5.000000E-01	-5.759500E+01	-1.713819E+00	-4.376943E-12	-90.0000	-1.713819E+00	-5.759500E+01	2.794059E+01
	5.000000E-01	-5.656671E+01	1.713819E+00	3.808509E-12	90.0000	1.713819E+00	-5.656671E+01	2.914027E+01
34	-5.000000E-01	-5.759500E+01	-1.713819E+00	-2.557954E-12	-90.0000	-1.713819E+00	-5.759500E+01	2.794059E+01
	5.000000E-01	-5.656671E+01	1.713819E+00	3.581135E-12	90.0000	1.713819E+00	-5.656671E+01	2.914027E+01
35	-5.000000E-01	-5.759500E+01	-1.713819E+00	2.273737E-13	90.0000	-1.713819E+00	-5.759500E+01	2.794059E+01
	5.000000E-01	-5.656671E+01	1.713819E+00	2.273737E-13	90.0000	1.713819E+00	-5.656671E+01	2.914027E+01
41	-5.000000E-01	-5.755685E+01	-1.669308E+00	-3.524292E-12	-90.0000	-1.669308E+00	-5.755685E+01	2.794377E+01
	5.000000E-01	-5.655526E+01	1.669308E+00	-1.136868E-13	-90.0000	1.669308E+00	-5.655526E+01	2.911229E+01
42	-5.000000E-01	-5.755685E+01	-1.669308E+00	-2.955858E-12	-90.0000	-1.669308E+00	-5.755685E+01	2.794377E+01
	5.000000E-01	-5.655526E+01	1.669308E+00	-3.637979E-12	-90.0000	1.669308E+00	-5.655526E+01	2.911229E+01
43	-5.000000E-01	-5.755685E+01	-1.669308E+00	-1.193712E-12	-90.0000	-1.669308E+00	-5.755685E+01	2.794377E+01
	5.000000E-01	-5.655526E+01	1.669308E+00	-3.922196E-12	-90.0000	1.669308E+00	-5.655526E+01	2.911229E+01
44	-5.000000E-01	-5.755685E+01	-1.669308E+00	-1.705303E-12	-90.0000	-1.669308E+00	-5.755685E+01	2.794377E+01
	5.000000E-01	-5.655526E+01	1.669308E+00	-3.069545E-12	-90.0000	1.669308E+00	-5.655526E+01	2.911229E+01
45	-5.000000E-01	-5.755685E+01	-1.669308E+00	-3.979039E-13	-90.0000	-1.669308E+00	-5.755685E+01	2.794377E+01
	5.000000E-01	-5.655526E+01	1.669308E+00	-1.080025E-12	-90.0000	1.669308E+00	-5.655526E+01	2.911229E+01
51	-5.000000E-01	-5.857257E+01	1.664961E+00	-3.126388E-13	-90.0000	1.664961E+00	-5.857257E+01	3.011876E+01
	5.000000E-01	-5.957154E+01	-1.664961E+00	-3.126388E-13	-90.0000	-1.664961E+00	-5.957154E+01	2.895329E+01
52	-5.000000E-01	-5.857257E+01	1.664961E+00	5.684342E-14	90.0000	1.664961E+00	-5.857257E+01	3.011876E+01
	5.000000E-01	-5.957154E+01	-1.664961E+00	-1.307399E-12	-90.0000	-1.664961E+00	-5.957154E+01	2.895329E+01
53	-5.000000E-01	-5.857257E+01	1.664961E+00	-1.051603E-12	-90.0000	1.664961E+00	-5.857257E+01	3.011876E+01
	5.000000E-01	-5.957154E+01	-1.664961E+00	3.126388E-13	90.0000	-1.664961E+00	-5.957154E+01	2.895329E+01
54	-5.000000E-01	-5.857257E+01	1.664961E+00	-2.103206E-12	-90.0000	1.664961E+00	-5.857257E+01	3.011876E+01
	5.000000E-01	-5.957154E+01	-1.664961E+00	6.252776E-13	90.0000	-1.664961E+00	-5.957154E+01	2.895329E+01
55	-5.000000E-01	-5.857257E+01	1.664961E+00	1.136868E-13	90.0000	1.664961E+00	-5.857257E+01	3.011876E+01
	5.000000E-01	-5.957154E+01	-1.664961E+00	-5.684342E-13	-90.0000	-1.664961E+00	-5.957154E+01	2.895329E+01

FIRST TWO LOADS COMBINED (ARCH PROBLEM)   SUBCOM 5

S T R E S S E S   I N   G E N E R A L   Q U A D R I L A T E R A L   E L E M E N T S   (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAX SHEAR
1	-5.000000E-01	-5.536022E+01	3.772184E+00	-6.338860E-01	-89.3859	3.778978E+00	-5.536702E+01	2.957300E+01
	5.000000E-01	-8.678346E+01	-4.691009E+00	1.457306E+00	88.9833	-4.665147E+00	-8.680932E+01	4.107209E+01
2	-5.000000E-01	-6.153901E+01	2.185006E+00	-1.240365E+00	-88.8853	2.209140E+00	-6.156315E+01	3.188614E+01
	5.000000E-01	-7.886289E+01	-3.220779E+00	3.902656E+00	87.0543	-3.019959E+00	-7.906371E+01	3.802188E+01
11	-5.000000E-01	-5.827926E+01	5.946551E+00	-3.540655E-02	-89.9684	5.946571E+00	-5.827928E+01	3.211293E+01
	5.000000E-01	-9.110231E+01	-8.265795E+00	5.353642E-01	89.6297	-8.262335E+00	-9.110577E+01	4.142172E+01
12	-5.000000E-01	-6.534473E+01	2.924311E+00	2.841598E-01	89.7615	2.925494E+00	-6.534591E+01	3.413570E+01
	5.000000E-01	-8.408584E+01	-6.514955E+00	1.862845E+00	88.6251	-6.470245E+00	-8.413055E+01	3.883015E+01
21	-5.000000E-01	-6.039853E+01	3.444204E+00	-3.931683E-01	-89.6472	3.446626E+00	-6.040095E+01	3.192379E+01
	5.000000E-01	-8.996342E+01	-7.006775E+00	6.667147E-01	89.5257	-7.001091E+00	-8.996911E+01	4.148401E+01
22	-5.000000E-01	-6.687413E+01	3.038982E-01	-5.492134E-01	-89.5316	3.083880E-01	-6.687862E+01	3.359350E+01
	5.000000E-01	-8.361508E+01	-6.486732E+00	2.212739E+00	88.3580	-6.423303E+00	-8.367851E+01	3.862760E+01
31	-5.000000E-01	-6.176508E+01	-6.180918E-01	-2.620588E-01	-89.7545	-6.169687E-01	-6.176620E+01	3.057462E+01
	5.000000E-01	-8.614275E+01	-3.778059E+00	2.430320E-01	89.8309	-3.777342E+00	-8.614346E+01	4.118306E+01
32	-5.000000E-01	-6.696560E+01	-3.895858E+00	-1.835476E-01	-89.8333	-3.895324E+00	-6.696613E+01	3.153540E+01
	5.000000E-01	-8.046766E+01	-4.280368E+00	9.140492E-01	89.3127	-4.269403E+00	-8.047863E+01	3.810461E+01
41	-5.000000E-01	-6.283747E+01	-1.429824E+00	-2.033537E-01	-89.8103	-1.429150E+00	-6.283814E+01	3.070450E+01
	5.000000E-01	-8.531361E+01	-3.901574E+00	8.454695E-01	89.4051	-3.892795E+00	-8.532239E+01	4.071480E+01
42	-5.000000E-01	-6.724554E+01	-4.717750E+00	-1.687972E-01	-89.8453	-4.717294E+00	-6.724600E+01	3.126435E+01
	5.000000E-01	-8.025308E+01	-5.009358E+00	2.329436E+00	88.2270	-4.997851E+00	-8.032519E+01	3.766367E+01
51	-5.000000E-01	-6.340726E+01	1.201004E+00	2.738414E-02	89.9757	1.201016E+00	-6.340727E+01	3.230414E+01
	5.000000E-01	-8.758414E+01	-7.392870E+00	1.587993E-01	89.8865	-7.392556E+00	-8.758445E+01	4.009595E+01
52	-5.000000E-01	-6.777453E+01	-2.024273E+00	1.995038E-01	89.8262	-2.023668E+00	-6.777513E+01	3.287573E+01
	5.000000E-01	-8.292230E+01	-8.850935E+00	4.689202E-01	89.6373	-8.847966E+00	-8.292527E+01	3.703865E+01

STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD SUBCASE 1

S T R E S S E S I N B A R E L E M E N T S (C B A R)

ELEMENT ID.	SA1 / SB1	SA2 / SB2	SA3 / SB3	SA4 / SB4	AXIAL STRESS	SA-MAX / SB-MAX	SA-MIN / SB-MIN	M.S.-T / M.S.-C
101	1.777819E+01	2.606363E+01	0.0	0.0	-2.958180E+01	-3.518169E+00	-2.958180E+01	
	2.067983E+01	3.615829E+00	0.0	0.0		-8.901973E+00	-2.958180E+01	
102	8.762021E+00	4.088217E+01	0.0	0.0	-3.813125E+01	2.750919E+00	-3.813125E+01	
	1.636086E+01	-2.398437E+01	0.0	0.0		-2.177039E+01	-6.211561E+01	
103	-4.769990E+00	4.504218E+01	0.0	0.0	-5.389144E+01	-8.849261E+00	-5.866143E+01	
	5.381531E+00	-5.030657E+01	0.0	0.0		-4.850991E+01	-1.041980E+02	
104	-1.685068E+01	2.616520E+01	0.0	0.0	-7.132793E+01	-4.516273E+01	-8.817861E+01	
	-1.726711E+01	-4.987735E+01	0.0	0.0		-7.132793E+01	-1.212053E+02	
105	-2.221661E+01	-2.116933E+01	0.0	0.0	-7.742910E+01	-7.742910E+01	-9.964571E+01	
	-6.496445E+00	2.207008E+00	0.0	0.0		-7.522209E+01	-8.392555E+01	
141	1.083077E+01	1.090796E+01	0.0	0.0	-4.195017E+01	-3.104221E+01	-4.195017E+01	
	9.871705E+00	9.987181E+00	0.0	0.0		-3.196299E+01	-4.195017E+01	
142	1.079128E+01	1.064428E+01	0.0	0.0	-4.353340E+01	-3.275213E+01	-4.353340E+01	
	6.871819E+00	6.929305E+00	0.0	0.0		-3.660350E+01	-4.353340E+01	
143	1.037027E+01	9.860172E+00	0.0	0.0	-4.827662E+01	-3.790635E+01	-4.827662E+01	
	-1.032497E+00	-9.670713E-01	0.0	0.0		-4.827662E+01	-4.930961E+01	
144	8.371822E+00	8.063640E+00	0.0	0.0	-5.948399E+01	-5.111216E+01	-5.948399E+01	
	-1.709053E+01	-1.777677E+01	0.0	0.0		-5.948399E+01	-7.726076E+01	
145	-3.717915E+00	-4.215561E+00	0.0	0.0	-7.773501E+01	-7.773501E+01	-8.195057E+01	
	-3.533586E+01	-3.335410E+01	0.0	0.0		-7.773501E+01	-1.130709E+02	

PRESSURE LOAD SUBCASE 1

S T R A I N S / C U R V A T U R E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	STRNS./CURVS. IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRIN. STRNS./CURVS. (ZERO SHEAR/TWIST) ANGLE	MAJOR	MINOR	MAXIMUM SHEAR/TWIST
1	-1.817045E-06	5.378878E-07	1.208888E-08	89.8529	5.379033E-07	-1.817060E-06	2.354964E-06
	5.375257E-07	4.580126E-09	-1.457683E-07	-7.6485	5.473134E-07	-5.207548E-09	5.525209E-07
2	-1.796395E-06	5.263860E-07	5.562295E-08	89.3141	5.267189E-07	-1.796728E-06	2.323447E-06
	3.496842E-07	2.832906E-08	-3.734947E-07	-24.6456	4.353638E-07	-5.735054E-08	4.927143E-07
3	-1.774815E-06	5.052219E-07	1.607518E-07	87.9835	5.080518E-07	-1.777645E-06	2.285697E-06
	8.690640E-09	6.010532E-08	-3.972933E-07	-48.6869	2.347011E-07	-1.659052E-07	4.006063E-07
4	-1.797700E-06	4.595414E-07	3.979573E-07	85.0007	4.769474E-07	-1.815106E-06	2.292054E-06
	-4.025136E-07	9.648065E-08	-5.666061E-08	-86.7609	9.808395E-08	-4.041169E-07	5.022008E-07
5	-1.917868E-06	2.133225E-07	9.977250E-07	77.4566	3.243143E-07	-2.028859E-06	2.353174E-06
	-4.933869E-07	2.337335E-08	5.244554E-07	67.2883	1.331286E-07	-6.031422E-07	7.362708E-07
11	-1.948304E-06	5.647740E-07	1.371155E-08	89.8437	5.647927E-07	-1.948322E-06	2.513115E-06
	4.872372E-07	1.273400E-07	-6.773296E-08	-5.3292	4.903963E-07	1.241809E-07	3.662154E-07
12	-1.941026E-06	5.396450E-07	6.692388E-08	89.2273	5.400963E-07	-1.941480E-06	2.481576E-06
	3.416008E-07	1.340104E-07	-1.697155E-07	-19.6339	3.718738E-07	1.037374E-07	2.681364E-07
13	-1.926155E-06	4.828763E-07	1.983791E-07	87.6462	4.869535E-07	-1.930232E-06	2.417186E-06
	7.711632E-08	1.366873E-07	-1.657815E-07	-54.8826	1.949817E-07	1.882201E-08	1.761596E-07
14	-1.894653E-06	3.690324E-07	4.488218E-07	84.3927	3.910650E-07	-1.916686E-06	2.307751E-06
	-2.474896E-07	1.108572E-07	5.311284E-08	85.7846	1.128145E-07	-2.494470E-07	3.622615E-07
15	-1.795761E-06	1.464379E-07	7.315837E-07	79.6799	2.130464E-07	-1.862370E-06	2.075416E-06
	-6.584647E-07	6.719263E-08	2.650105E-07	79.9689	9.063108E-08	-6.819032E-07	7.725342E-07
21	-1.958964E-06	5.518831E-07	1.765555E-08	89.7986	5.519142E-07	-1.958995E-06	2.510909E-06
	4.208484E-07	4.565020E-08	-6.735334E-08	-5.0685	4.238471E-07	4.265145E-08	3.811957E-07
22	-1.946322E-06	5.103277E-07	7.359220E-08	89.1421	5.108788E-07	-1.946873E-06	2.457752E-06
	3.116093E-07	6.695543E-08	-1.645023E-07	-16.9582	3.366904E-07	4.187432E-08	2.948161E-07
23	-1.915610E-06	4.250489E-07	1.816215E-07	87.7815	4.285669E-07	-1.919128E-06	2.347695E-06
	1.204446E-07	1.083137E-07	-1.610353E-07	-42.8460	1.951249E-07	3.363339E-08	1.614915E-07
24	-1.851056E-06	2.924078E-07	3.392236E-07	85.5035	3.057462E-07	-1.864395E-06	2.170141E-06
	-1.191904E-07	1.115748E-07	-4.713230E-08	-84.2282	1.139568E-07	-1.215725E-07	2.355293E-07
25	-1.734838E-06	1.068893E-07	4.758125E-07	82.7572	1.371247E-07	-1.765073E-06	1.902198E-06
	-7.337118E-07	5.280374E-08	3.012883E-08	88.9031	5.309216E-08	-7.340003E-07	7.870924E-07
31	-1.903020E-06	5.195322E-07	1.533565E-08	89.8187	5.195564E-07	-1.903045E-06	2.422601E-06
	3.633188E-07	-1.187832E-07	-5.077468E-08	-3.0061	3.646520E-07	-1.201164E-07	4.847683E-07

PRESSURE LOAD SUBCASE 1

S T R A I N S / C U R V A T U R E S I N G E N E R A L Q U A D R I L A T E R A L E L E M E N T S (C Q U A D 2)
(IN ELEMENT COORDINATE SYSTEM)

ELEMENT ID.	STRNS./CURVS. IN ELEMENT COORD SYSTEM NORMAL-X	NORMAL-Y	SHEAR-XY	PRIN. STRNS./CURVS. (ZERO SHEAR/TWIST) ANGLE	MAJOR	MINOR	MAXIMUM SHEAR/TWIST
32	-1.881592E-06	4.667615E-07	6.098297E-08	89.2562	4.671574E-07	-1.881988E-06	2.349145E-06
	2.920945E-07	-1.174450E-07	-9.345209E-08	-6.4271	2.973580E-07	-1.227085E-07	4.200665E-07
33	-1.836005E-06	3.677528E-07	1.322634E-07	88.2827	3.697355E-07	-1.837988E-06	2.207723E-06
	1.449820E-07	-1.159713E-07	-1.216440E-08	-1.3345	1.451237E-07	-1.161130E-07	2.612367E-07
34	-1.758964E-06	2.314716E-07	2.066268E-07	87.0365	2.368200E-07	-1.764212E-06	2.001032E-06
	-1.141596E-07	-8.842541E-08	4.334330E-08	60.3494	-7.608889E-08	-1.264962E-07	5.040727E-08
35	-1.646330E-06	7.757583E-08	2.843203E-07	85.3173	8.922027E-08	-1.657975E-06	1.747195E-06
	-6.862356E-07	-3.274007E-08	-4.031573E-08	-88.2349	-3.211887E-08	-6.868568E-07	6.547379E-07
41	-1.902163E-06	5.072898E-07	9.741718E-09	89.8842	5.072996E-07	-1.902172E-06	2.409472E-06
	3.165974E-07	-1.204538E-07	-6.013054E-08	-3.9169	3.186559E-07	-1.225123E-07	4.411683E-07
42	-1.875933E-06	4.460606E-07	4.484372E-08	89.4468	4.462770E-07	-1.876149E-06	2.322426E-06
	2.800502E-07	-1.138040E-07	-1.598570E-07	-11.0456	2.956527E-07	-1.294065E-07	4.250593E-07
43	-1.823047E-06	3.387237E-07	1.178847E-07	88.4393	3.403296E-07	-1.824653E-06	2.164983E-06
	1.872263E-07	-1.068867E-07	-1.704394E-07	-15.0462	2.101350E-07	-1.297949E-07	3.399299E-07
44	-1.742554E-06	2.051059E-07	2.139584E-07	86.8655	2.109643E-07	-1.748412E-06	1.959376E-06
	-5.923239E-08	-8.122328E-08	2.075607E-08	21.6727	-5.510820E-08	-8.534747E-08	3.023928E-08
45	-1.637354E-06	6.702163E-08	2.445421E-07	85.9175	7.574861E-08	-1.646081E-06	1.721829E-06
	-7.246421E-07	-3.523431E-08	1.725369E-07	82.9746	-2.460312E-08	-7.352733E-07	7.106701E-07
51	-1.955783E-06	5.171028E-07	1.963251E-09	89.9773	5.171032E-07	-1.955783E-06	2.472886E-06
	2.863026E-07	4.178117E-08	-2.359855E-08	-2.7562	2.868706E-07	4.121312E-08	2.456575E-07
52	-1.929652E-06	4.499144E-07	1.285919E-08	89.8452	4.499318E-07	-1.929670E-06	2.379602E-06
	2.722087E-07	8.021948E-08	-5.558317E-08	-8.0732	2.761507E-07	7.627742E-08	1.998733E-07
53	-1.876336E-06	3.363749E-07	3.974431E-08	89.4855	3.365534E-07	-1.876514E-06	2.213068E-06
	2.366530E-07	1.272326E-07	-2.961044E-08	-7.5711	2.386209E-07	1.252648E-07	1.133561E-07
54	-1.796599E-06	2.070351E-07	7.408529E-08	88.9412	2.077197E-07	-1.797283E-06	2.005003E-06
	5.129405E-08	1.172724E-07	8.159695E-08	64.4793	1.367503E-07	3.181607E-08	1.049343E-07
55	-1.699425E-06	7.114025E-08	8.842599E-08	88.5704	7.224361E-08	-1.700528E-06	1.772772E-06
	-8.464583E-07	5.236632E-08	1.121986E-07	86.4423	5.585418E-08	-8.499462E-07	9.058003E-07

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 1,0
TIME 10
CEND
```

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

```
                          C A S E   C O N T R O L   D E C K   E C H O
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1B
  2      SUBTITLE=RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD
  3      LABEL=CONICAL SHELL ELEMENTS  (COMPARE TO PROBLEM 1A, SUBCASE 3)
  4      AXISYM=COSINE
  5      SET 7 = 15,35
  6      LOAD=15
  7      HARMONICS=ALL
  8      DISP=ALL
  9      STRESS=7
 10      SPCFORCE=ALL
 11      OLOAD=ALL
 12      BEGIN BULK
```

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

SORTED BULK DATA ECHO

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	AXIC	2								
2-	CCONEAX	2	4	2	3					
3-	CCONEAX	3	4	3	5					
4-	CCONEAX	5	3	5	10					
5-	CCONEAX	10	3	10	15					
6-	CCONEAX	15	3	15	20					
7-	CCONEAX	20	3	20	25					
8-	CCONEAX	25	3	25	30					
9-	CCONEAX	30	3	30	35					
10-	CCONEAX	35	3	35	40					
11-	CCONEAX	40	3	40	45					
12-	CCONEAX	42	4	42	43					
13-	CCONEAX	43	4	43	45					
14-	CCONEAX	45	3	45	50					
15-	CCONEAX	50	3	50	55					
16-	CCONEAX	55	3	55	60					
17-	CCONEAX	60	3	60	65					
18-	MAT1	4	3.+7		.3	7.324-4				
19-	PCONEAX	3	4	1.	4	.08333	4	1.		+PCON1
20-	+PCON1	-0.5	0.5	0.	30.	60.	90.	135.	180.	
21-	PCONEAX	4	4	.5	4	.010417	4	.5		
22-	POINTAX	36	35	45.						
23-	PRESAX	15	-1.0	5	10	.0	360.			
24-	PRESAX	15	-1.0	10	15	.0	360.			
25-	PRESAX	15	-1.0	15	20	.0	360.			
26-	PRESAX	15	-1.0	20	25	.0	360.			
27-	PRESAX	15	-1.0	25	30	.0	360.			
28-	PRESAX	15	-1.0	30	35	.0	360.			
29-	PRESAX	15	-1.0	35	40	.0	360.			
30-	PRESAX	15	-1.0	40	45	.0	360.			
31-	PRESAX	15	-1.0	45	50	.0	360.			
32-	PRESAX	15	-1.0	50	55	.0	360.			
33-	PRESAX	15	-1.0	55	60	.0	360.			
34-	PRESAX	15	-1.0	60	65	.0	360.			
35-	RINGAX	2		57.5	.0			46		
36-	RINGAX	3		58.75	.0			46		
37-	RINGAX	5		60.	.0			4		
38-	RINGAX	10		60.	4.			4		
39-	RINGAX	15		60.	8.			4		
40-	RINGAX	20		60.	12.			4		
41-	RINGAX	25		60.	16.			4		
42-	RINGAX	30		60.	20.			4		
43-	RINGAX	35		60.	24.			4		
44-	RINGAX	40		60.	28.			4		
45-	RINGAX	42		57.5	32.			46		
46-	RINGAX	43		58.75	32.			46		
47-	RINGAX	45		60.	32.			4		
48-	RINGAX	50		60.	36.			4		
49-	RINGAX	55		60.	40.			4		
50-	RINGAX	60		60.	44.			4		

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

```
                                     S O R T E D   B U L K   D A T A   E C H O
   CARD
   COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
    51-         RINGAX  65            60.       48.                      3452
                ENDDATA
```

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

```
RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS  (COMPARE TO PROBLEM 1A, SUBCASE 3)



*** USER WARNING MESSAGE 2015, EITHER NO ELEMENTS CONNECT INTERNAL GRID POINT         1
OR IT IS CONNECTED TO A RIGID ELEMENT OR A GENERAL ELEMENT.


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE       35 STARTING WITH ID    2001

*** SYSTEM INFORMATION MESSAGE 3107.  EMGOLD IS PROCESSING ELEMENTS OF TYPE = 35, BEGINNING WITH ELEMENT ID =      2001

                                        MPYAD--NULL MATRIX PRODUCT
                                        MPYAD--NULL MATRIX PRODUCT
                                        MPYAD--NULL MATRIX PRODUCT

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =  205 )
          TIME ESTIMATE=      1          C AVG =      6          PC AVG =      0  SPILL GROUPS =      0             S AVG =      1
     ADDITIONAL CORE= -28431             C MAX =     11           PCMAX =      0     PC GROUPS =      0  PREFACE LOOPS =      1

                                        MPYAD--NULL MATRIX PRODUCT
                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .5

*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -8.4760391E-13


                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .1
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .2



*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2077, SDR2 OUTPUT DATA BLOCK NO. 2 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED
```

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

D I S P L A C E M E N T V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
36		-1.167751E-04	0.0	-1.372601E-05	0.0	1.112742E-06	0.0
2	0	-9.118936E-05	0.0	-3.630717E-05	0.0	-3.537418E-06	0.0
3	0	-9.062216E-05	0.0	-3.1[illegible]7E-05	0.0	-3.515412E-06	0.0
5	0	-9.010751E-05	0.0	-2.7[illegible]779E-05	0.0	-3.495443E-06	0.0
10	0	-1.052826E-04	0.0	-2.556372E-05	0.0	-3.469719E-06	0.0
15	0	-1.161534E-04	0.0	-2.333901E-05	0.0	-1.917110E-06	0.0
20	0	-1.210210E-04	0.0	-2.0[illegible]58[illegible]8E-05	0.0	-6.242796E-07	0.0
25	0	-1.218593E-04	0.0	-1.8524[illegible]3E-05	0.0	1.275398E-07	0.0
30	0	-1.202955E-04	0.0	-1.6[illegible]9E-05	0.0	6.374756E-07	0.0
35	0	-1.167751E-04	0.0	-1.372601E-05	0.0	1.112742E-06	0.0
40	0	-1.117314E-04	0.0	-1.1439[illegible]8E-05	0.0	1.272038E-06	0.0
42	0	-1.095846E-04	0.0	-9.245275E-06	0.0	1.175702E-09	0.0
43	0	-1.089030E-04	0.0	-9.246740E-06	0.0	1.168388E-09	0.0
45	0	-1.082845E-04	0.0	-9.2481[illegible]7E-06	0.0	1.161751E-09	0.0
50	0	-1.117000E-04	0.0	-7.056703E-06	0.0	-1.251518E-06	0.0
55	0	-1.165694E-04	0.0	-4.772603E-06	0.0	-1.040575E-06	0.0
60	0	-1.196707E-04	0.0	-2.406617E-06	0.0	-5.029012E-07	0.0
65	0	-1.206558E-04	0.0	0.0	0.0	0.0	0.0
2	1	0.0	0.0	0.0	0.0	0.0	0.0
3	1	0.0	0.0	0.0	0.0	0.0	0.0
5	1	0.0	0.0	0.0	0.0	0.0	0.0
10	1	0.0	0.0	0.0	0.0	0.0	0.0
15	1	0.0	0.0	0.0	0.0	0.0	0.0
20	1	0.0	0.0	0.0	0.0	0.0	0.0
25	1	0.0	0.0	0.0	0.0	0.0	0.0
30	1	0.0	0.0	0.0	0.0	0.0	0.0
35	1	0.0	0.0	0.0	0.0	0.0	0.0
40	1	0.0	0.0	0.0	0.0	0.0	0.0
42	1	0.0	0.0	0.0	0.0	0.0	0.0
43	1	0.0	0.0	0.0	0.0	0.0	0.0
45	1	0.0	0.0	0.0	0.0	0.0	0.0
50	1	0.0	0.0	0.0	0.0	0.0	0.0
55	1	0.0	0.0	0.0	0.0	0.0	0.0
60	1	0.0	0.0	0.0	0.0	0.0	0.0
65	1	0.0	0.0	0.0	0.0	0.0	0.0
2	2	0.0	0.0	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0
5	2	0.0	0.0	0.0	0.0	0.0	0.0
10	2	0.0	0.0	0.0	0.0	0.0	0.0
15	2	0.0	0.0	0.0	0.0	0.0	0.0
20	2	0.0	0.0	0.0	0.0	0.0	0.0
25	2	0.0	0.0	0.0	0.0	0.0	0.0
30	2	0.0	0.0	0.0	0.0	0.0	0.0
35	2	0.0	0.0	0.0	0.0	0.0	0.0
40	2	0.0	0.0	0.0	0.0	0.0	0.0
42	2	0.0	0.0	0.0	0.0	0.0	0.0
43	2	0.0	0.0	0.0	0.0	0.0	0.0
45	2	0.0	0.0	0.0	0.0	0.0	0.0
50	2	0.0	0.0	0.0	0.0	0.0	0.0
55	2	0.0	0.0	0.0	0.0	0.0	0.0

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

D I S P L A C E M E N T   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
60	2	0.0	0.0	0.0	0.0	0.0	0.0
65	2	0.0	0.0	0.0	0.0	0.0	0.0

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

L O A D   V E C T O R

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
5	0	-7.539822E+02	0.0	0.0	0.0	0.0	0.0
10	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
15	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
20	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
25	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
30	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
35	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
40	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
45	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
50	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
55	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
60	0	-1.507964E+03	0.0	0.0	0.0	0.0	0.0
65	0	-7.539822E+02	0.0	0.0	0.0	0.0	0.0

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

SECTOR-ID POINT-ID RING-ID	HARMONIC	T1	T2	T3	R1	R2	R3
65	0	0.0	0.0	-7.377821E-09	0.0	6.279852E+02	0.0

RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

S T R E S S E S   I N   A X I S - S Y M M E T R I C   C O N I C A L   S H E L L   E L E M E N T S   (CCONEAX)

ELEMENT ID.	HARMONIC	POINT ANGLE	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-V	NORMAL-U	SHEAR-UV	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAXIMUM SHEAR
15	0		-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0				
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0				
15	1		-5.000000E-01	0.0	0.0	0.0				
			5.000000E-01	0.0	0.0	0.0				
15	2		-5.000000E-01	0.0	0.0	0.0				
			5.000000E-01	0.0	0.0	0.0				
15		0.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
15		30.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
15		60.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
15		90.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
15		135.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
15		180.0000	-5.000000E-01	-1.515142E+01	-6.416098E+01	0.0	0.0000	-1.515142E+01	-6.416098E+01	2.450478E+01
			5.000000E-01	1.508066E+01	-5.509136E+01	0.0	0.0000	1.508066E+01	-5.509136E+01	3.508601E+01
35	0		-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0				
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0				
35	1		-5.000000E-01	0.0	0.0	0.0				
			5.000000E-01	0.0	0.0	0.0				
35	2		-5.000000E-01	0.0	0.0	0.0				
			5.000000E-01	0.0	0.0	0.0				
35		0.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01
35		30.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01
35		60.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01
35		90.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)

S T R E S S E S I N A X I S - S Y M M E T R I C C O N I C A L S H E L L E L E M E N T S (CCONEAX)

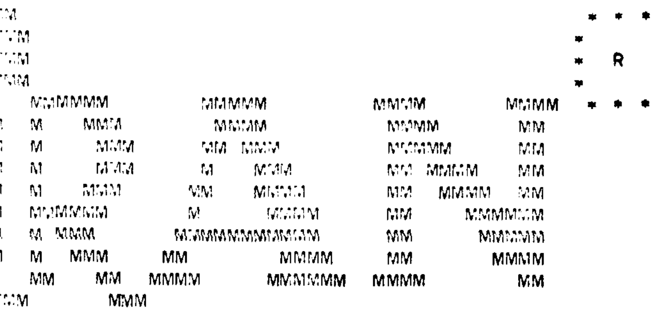
ELEMENT ID.	HARMONIC	POINT ANGLE	FIBRE DISTANCE	STRESSES IN ELEMENT COORD SYSTEM NORMAL-V	NORMAL-U	SHEAR-UV	PRINCIPAL STRESSES (ZERO SHEAR) ANGLE	MAJOR	MINOR	MAXIMUM SHEAR
35		135.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01
35		180.0000	-5.000000E-01	-1.008167E+01	-6.019096E+01	0.0	0.0000	-1.008167E+01	-6.019096E+01	2.505465E+01
			5.000000E-01	1.007292E+01	-5.414459E+01	0.0	0.0000	1.007292E+01	-5.414459E+01	3.210875E+01

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1



SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 1,0
TIME 10
CEND
```

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1C
  2      SUBTITLE=SYMMETRY EXAMPLE
  3      DISP=ALL
  4      OLOAD=ALL
  5      LOAD=21
  6      SUBCASE 1
  7        LABEL=SYMMETRY
  8        SPC=32
  9      SUBCASE 2
 10        LABEL=ANTI-SYMMETRY
 11        SPC=33
 12      SUBCOM 11
 13        LABEL=COMBINED SOLUTION - LOADED SIDE
 14        SUBSEQ=0.5,0.5
 15      SUBCOM 12
 16        LABEL=COMBINED SOLUTION - UNLOADED SIDE
 17        SUBSEQ=0.5,-0.5
 18      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

```
                                    S O R T E D   B U L K   D A T A   E C H O
      CARD
      COUNT      .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
        1-       BAROR          4                        1.      0.0     1.      1
        2-       CBAR    1               1       2
        3-       CBAR    2               2       3
        4-       CBAR    3               3       4
        5-       CBAR    4               4       5
        6-       CBAR    5               5       6
        7-       CBAR    6               6       7
        8-       CBAR    7               7       8
        9-       CBAR    8               8       9
       10-       CBAR    9               9       10
       11-       CBAR    10              10      11
       12-       CBAR    11              11      12
       13-       CBAR    12              12      13
       14-       CBAR    21              21      22
       15-       CBAR    22              22      23
       16-       CBAR    23              23      24
       17-       CBAR    24              24      25
       18-       CBAR    25              25      26
       19-       CBAR    26              26      27
       20-       FORCE   21      5               1000.   1.      1.      0.0
       21-       FORCE   21      25              1000.   1.      1.      0.0
       22-       GRID    1               2.      0.0     2.              123456
       23-       GRID    2               2.      0.0     1.5
       24-       GRID    3               2.      0.0     1.
       25-       GRID    4               1.5     0.0     1.
       26-       GRID    5               1.      0.0     1.
       27-       GRID    6               1.      .5      1.
       28-       GRID    7               1.      1.      1.
       29-       GRID    8               1.      1.5     1.
       30-       GRID    9               1.      2.      1.
       31-       GRID    10              .5      2.      1.
       32-       GRID    11              0.0     2.      1.
       33-       GRID    12              0.0     2.      .5
       34-       GRID    13              0.0     2.      0.0             123456
       35-       GRID    21              2.      0.0     2.              123456
       36-       GRID    22              2.      0.0     1.5
       37-       GRID    23              2.      0.0     1.
       38-       GRID    24              1.5     0.0     1.
       39-       GRID    25              1.      0.0     1.
       40-       GRID    26              1.      .5      1.
       41-       GRID    27              1.      1.      1.
       42-       MAT1    5       3.+7            .3      7.324-4
       43-       PBAR    4       5       1.      .1      .1      .15
       44-       SPC1    32      123     27
       45-       SPC1    33      456     27
                 ENDDATA

   **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**
```

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE   34 STARTING WITH ID   1

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =   99 )
            TIME ESTIMATE=      1          C AVG =     7         PC AVG =     0   SPILL GROUPS =     0            S AVG =      1
        ADDITIONAL CORE= -28454            C MAX =     9          PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1

                                            MPYAD--NULL MATRIX PRODUCT
                                            METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .2
```

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD    1 EPSILON SUB E = -2.6366174E-12

                              MPYAD--NULL MATRIX PRODUCT
                              METHOD 2 T ,NBR PASSES =    1,EST. TIME =        .0

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =    99 )
            TIME ESTIMATE=        1           C AVG =      7          PC AVG =      0   SPILL GROUPS =     0              S AVG =      1
          ADDITIONAL CORE= -28454             C MAX =      9           PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =      1

                              MPYAD--NULL MATRIX PRODUCT
                              METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .2
*** USER INFORMATION MESSAGE 3035

FOR LOAD    2 EPSILON SUB E = -2.3349710E-12

                              MPYAD--NULL MATRIX PRODUCT
                              METHOD 2 T ,NBR PASSES =    1,EST. TIME =        .0


*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED
```

SYMMETRY SUBCASE 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.5[illegible]0835E-05	2.0[illegible]E-05	3.3121[illegible]5E-07	7.4[illegible]5024E-05	-9.0[illegible]8278E-05	-5.7[illegible]933E-05
3	G	7.[illegible]7321[illegible]E-05	6.[illegible]370E-05	[illegible]42[illegible]E-07	9.4[illegible]125E-05	-1.[illegible]18E-04	-1.1539[illegible]7E-04
4	G	[illegible].2[illegible]12[illegible]1E-05	1.2[illegible]21[illegible]E-04	-5.1[illegible]E-05	8.[illegible]701E-05	-[illegible].721702E-05	-1.211871E-04
5	G	1.06[illegible]37E-04	1.7[illegible]E-04	-[illegible]1E-05	6.7[illegible]277E-05	-8.522[illegible]E-05	-7.197635E-05
6	G	1.24[illegible]234E-04	1.7[illegible]375E-04	-6.5[illegible]E-05	5.841[illegible]4E-05	-6.5[illegible]8304E-05	-1.9[illegible]0777E-06
7	G	1.10[illegible]127E-04	1.[illegible]E-04	-3.8[illegible]E-05	4.8[illegible]6E-05	-4.[illegible]5378[illegible]E-05	5.458521E-05
8	G	7.227[illegible]43E-05	1.[illegible]E-04	-1.7[illegible]E-05	3.[illegible]72E-05	-2.719257E-05	9.772160E-05
9	G	1.5[illegible]2[illegible]36E-05	1.5[illegible]0E-04	-2.8[illegible]17[illegible]E-06	2.24[illegible]1E-05	-7.[illegible]47328E-0[illegible]	1.274[illegible]E-04
10	G	1.27[illegible]E-05	8.7735[illegible]E-0[illegible]	-4.1432[illegible]1E-06	-2.[illegible]6323E-06	2.4[illegible]5357E-06	1.3[illegible]25[illegible]E-04
11	G	1.00[illegible]752E-05	2.3305[illegible]E-05	-6.[illegible]242[illegible]E-07	-2.772256E-05	1.[illegible]6198E-05	1.1[illegible]7442E-04
12	G	3.633513E-06	5.1[illegible]7572E-06	-3.312115E-07	-2.802834E-05	1.229579E-05	5.837210E-05
13	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	0.0	0.0	0.0	0.0	0.0	0.0
22	G	2.187484E-05	1.276652E-05	6.6242[illegible]0E-07	4.6[illegible]2190E-05	-7.8086[illegible]9E-05	6.727734E-07
23	G	6.667464E-05	4.217772E-05	1.3248[illegible]6E-06	6.657[illegible]9E-05	-9.969[illegible]4E-05	1.345547E-06
24	G	7.996947E-05	3.916581E-05	-4.714503E-05	7.606069E-05	-9.473167E-05	1.506624E-05
25	G	9.126430E-05	2.266729E-05	-9.3[illegible]5884E-05	8.954269E-05	-9.307561E-05	5.545205E-05
26	G	5.234694E-05	1.133364E-05	-4.760745E-05	9.451066E-05	-9.307561E-05	9.574083E-05
27	G	0.0	0.0	0.0	9.616692E-05	-9.307561E-05	1.091704E-04

SYMMETRY EXAMPLE

ANTI-SYMMETRY SUBCASE 2

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.550635E-05	2.095419E-05	3.312115E-07	7.465024E-05	-9.038278E-05	-5.769933E-05
3	G	7.873216E-05	6.548370E-05	6.624230E-07	9.430125E-05	-1.108618E-04	-1.153987E-04
4	G	9.271241E-05	1.209218E-04	-5.128829E-05	8.069701E-05	-9.721702E-05	-1.211871E-04
5	G	1.060937E-04	1.775043E-04	-9.643041E-05	6.709277E-05	-8.522828E-05	-7.197635E-05
6	G	1.241234E-04	1.718375E-04	-6.584518E-05	5.841614E-05	-6.548304E-05	-1.980777E-06
7	G	1.164127E-04	1.611706E-04	-3.869045E-05	4.808346E-05	-4.653780E-05	5.458521E-05
8	G	7.227643E-05	1.408034E-04	-1.757633E-05	3.603472E-05	-2.719257E-05	9.772160E-05
9	G	1.542936E-05	1.543370E-04	-2.671770E-06	2.244991E-05	-7.847328E-06	1.274284E-04
10	G	1.274344E-05	8.773596E-05	-4.143201E-06	-2.636323E-06	2.455357E-06	1.362534E-04
11	G	1.005752E-05	2.340598E-05	-6.624230E-07	-2.772256E-05	1.116198E-05	1.167442E-04
12	G	3.633513E-06	8.187672E-06	-3.312115E-07	-2.802834E-05	1.229579E-05	5.837210E-05
13	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	0.0	0.0	0.0	0.0	0.0	0.0
22	G	2.914187E-05	2.914187E-05	1.734723E-17	1.026786E-04	-1.026786E-04	-1.160714E-04
23	G	8.878968E-05	8.878968E-05	3.469447E-17	1.220238E-04	-1.220238E-04	-2.321429E-04
24	G	1.054563E-04	2.146577E-04	-5.543155E-05	8.333333E-05	-9.970238E-05	-2.574405E-04
25	G	1.221230E-04	3.323413E-04	-9.970238E-05	4.464286E-05	-7.738095E-05	-1.994048E-04
26	G	1.968998E-04	3.323413E-04	-8.296131E-05	2.232143E-05	-3.869048E-05	-9.970238E-05
27	G	2.218254E-04	3.323413E-04	-7.738095E-05	0.0	0.0	0.0

SYMMETRY EXAMPLE

COMBINED SOLUTION - LOADED SIDE SUBCOM 11

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.550835E-05	2.095419E-05	3.312115E-07	7.465024E-05	-9.038278E-05	-5.769933E-05
3	G	7.873216E-05	6.548370E-05	6.624240E-07	9.430125E-05	-1.108618E-04	-1.153987E-04
4	G	9.271291E-05	1.269218E-04	-5.128829E-05	8.069701E-05	-9.721702E-05	-1.211871E-04
5	G	1.066937E-04	1.775043E-04	-9.683061E-05	6.709277E-05	-8.522828E-05	-7.197635E-05
6	G	1.246234E-04	1.718375E-04	-6.538438E-05	5.841614E-05	-6.588304E-05	-1.980777E-06
7	G	1.109127E-04	1.681706E-04	-3.869048E-05	4.808346E-05	-4.653780E-05	5.458521E-05
8	G	7.227643E-05	1.605038E-04	-1.757643E-05	3.609472E-05	-2.719257E-05	9.772160E-05
9	G	1.542936E-05	1.548370E-04	-2.871770E-06	2.244941E-05	-7.847328E-06	1.274284E-04
10	G	1.274344E-05	8.773596E-05	-4.143261E-06	-2.636323E-06	2.485357E-06	1.362534E-04
11	G	1.005752E-05	2.330598E-05	-6.624240E-07	-2.772256E-05	1.116198E-05	1.167442E-04
12	G	3.633513E-06	8.187672E-06	-3.312115E-07	-2.602834E-05	1.229579E-05	5.837210E-05
13	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	0.0	0.0	0.0	0.0	0.0	0.0
22	G	2.550835E-05	2.095419E-05	3.312115E-07	7.465024E-05	-9.038278E-05	-5.769933E-05
23	G	7.873216E-05	6.548370E-05	6.624240E-07	9.430125E-05	-1.108618E-04	-1.153987E-04
24	G	9.271291E-05	1.269218E-04	-5.128829E-05	8.069701E-05	-9.721702E-05	-1.211871E-04
25	G	1.066937E-04	1.775043E-04	-9.683061E-05	6.709277E-05	-8.522628E-05	-7.197635E-05
26	G	1.246234E-04	1.718375E-04	-6.538438E-05	5.841614E-05	-6.588304E-05	-1.980777E-06
27	G	1.109127E-04	1.681706E-04	-3.869048E-05	4.808346E-05	-4.653780E-05	5.458521E-05

COMBINED SOLUTION - UNLOADED SIDE SUBCOM 12

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	0.0	0.0	0.0	0.0	0.0
4	G	0.0	0.0	0.0	0.0	0.0	0.0
5	G	0.0	0.0	0.0	0.0	0.0	0.0
6	G	0.0	0.0	0.0	0.0	0.0	0.0
7	G	0.0	0.0	0.0	0.0	0.0	0.0
8	G	0.0	0.0	0.0	0.0	0.0	0.0
9	G	0.0	0.0	0.0	0.0	0.0	0.0
10	G	0.0	0.0	0.0	0.0	0.0	0.0
11	G	0.0	0.0	0.0	0.0	0.0	0.0
12	G	0.0	0.0	0.0	0.0	0.0	0.0
13	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	0.0	0.0	0.0	0.0	0.0	0.0
22	G	-3.633513E-06	-8.187672E-06	3.312115E-07	-2.802834E-05	1.229579E-05	5.837210E-05
23	G	-1.005752E-05	-2.330598E-05	6.624230E-07	-2.772256E-05	1.116198E-05	1.167442E-04
24	G	-1.274344E-05	-8.773596E-05	4.143261E-06	-2.636323E-06	2.455357E-06	1.362534E-04
25	G	-1.542936E-05	-1.548370E-04	2.871770E-06	2.244991E-05	-7.847328E-06	1.274284E-04
26	G	-7.227643E-05	-1.605038E-04	1.757693E-05	3.609472E-05	-2.719257E-05	9.772160E-05
27	G	-1.109127E-04	-1.661706E-04	3.869048E-05	4.808346E-05	-4.653780E-05	5.458521E-05

SYMMETRY SUBCASE 1

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
5	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0
25	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0

ANTI-SYMMETRY SUBCASE 2

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
5	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0
25	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0

COMBINED SOLUTION - LOADED SIDE

SUBCOM 11

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
5	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0
25	G	1.000000E+03	1.000000E+03	0.0	0.0	0.0	0.0

* * * END OF JOB * * *

```
                                        *** B A N D I T ***
VERSION 9, UPDATED 4 DEC 1978
NUMERICAL MECHANICS DIVISION (184), DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER, BETHESDA, MARYLAND 20084, U.S.A.
TODAY IS   12/27/79  11.04.20.

ECHO OF DATA DECK THROUGH BEGIN BULK CARD - - -
           1-  ID NASTRAN,DEMO
           2-  APP HEAT
           3-  SOL 1,0
           4-  TIME 10
           5-  $
           6-  $   THE FOLLOWING COMMENTS ARE READ BY BANDIT, WHICH RESEQUENCES THE
           7-  $        GRID POINTS FOR REDUCED RMS WAVEFRONT (IF POSSIBLE)
           8-  $        AND GENERATES SEQGP CARDS.
           9-  $   TO BE READ BY BANDIT, $ CARDS MUST APPEAR SOMEWHERE BEFORE THE
          10-  $        BEGIN BULK CARD.
          11-  $
          12-  $SEQUENCE   YES
          13-  $GRID     50
          14-  $CONFIG     6
          15-  CEND
          16-  TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1D
          17-  SUBTITLE=LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)
          18-  SPC=21
          19-  OLOAD=ALL
          20-  DISP=ALL
          21-  LOAD=29
          22-     SPCFORCE=ALL
          23-     FORCE=ALL
          24-  BEGIN BULK

***  WORKING STORAGE PARTITIONING - - -
        LENGTH OF OPEN CORE (DECIMAL WORDS)          7227
        LENGTH OF OPEN CORE (OCTAL)                016073
        BEGINNING OF OPEN CORE (OCTAL)             046705
        FIELD LENGTH (OCTAL)                       065000
        GRID POINT LIMIT                               54
        NODAL DEGREE LIMIT                             53
        PACKING DENSITY (INTEGERS/WORD)                 6
        $DIMENSION VALUE                              150

CP TIME TO SET UP CONNECTION TABLE        .871  SECONDS

NUMBER OF GRID POINTS APPEARING ON CONNECTION CARDS       42.      GRID CARDS ARE IGNORED.

MAXIMUM NODAL DEGREE BEFORE ANY NODES ARE IGNORED       8

BEFORE RESEQUENCING - - -
        BANDWIDTH            36
        PROFILE             314
        MAX WAVEFRONT         9
        AVG WAVEFRONT     7.476
        RMS WAVEFRONT     7.755

AFTER RESEQUENCING BY CUTHILL-MCKEE (CM) ALGORITHM - - -
        BANDWIDTH            12
        PROFILE             303
        MAX WAVEFRONT        11
        AVG WAVEFRONT     7.214
        RMS WAVEFRONT     7.567
        CP TIME            .527
```

AFTER RESEQUENCING BY GIBBS-POOLE-STOCKMEYER (GPS) ALGORITHM - - -

BANDWIDTH	11
PROFILE	293
MAX WAVEFRONT	9
AVG WAVEFRONT	6.976
RMS WAVEFRONT	7.213
CP TIME	.315

THE BEST SEQUENCE OF THOSE OBTAINED (BASED ON THE CRITERION SELECTED) WILL BE USED.

*** FIELD 10 OF FIRST SEQGP CARD CONTAINS THE NEW GRID POINT BANDWIDTH AND RMS WAVEFRONT.

INTEGER ADDED TO NEW SEQUENCE NUMBERS = 0

ECHO OF SEQGP CARDS GENERATED BY BANDIT - - -

SEQGP	1	1	2	2	3	3	4	4	11	7
SEQGP	5	5	6	6	41	28	42	29		
SEQGP	43	30	44	31	45	32	46	25		
SEQGP	12	8	11	7	13	9	14	10		
SEQGP	15	11	16	12	222	14	21	13		
SEQGP	23	15	24	16	25	17	26	18		
SEQGP	32	20	31	19	33	21	34	22		
SEQGP	35	23	36	24	52	36	51	35		
SEQGP	53	37	54	38	55	33	56	26		
SEQGP	62	41	61	40	63	42	64	39		
SEQGP	65	34	66	27						

*** ELEMENT COUNTS FOR DATA DECK - - -

CBAR	10
CQUAD2	30

*** BANDIT SUMMARY - - -

	BEFORE	AFTER
BANDWIDTH (B)	36	11
PROFILE (P)	314	293
MAXIMUM WAVEFRONT (C-MAX)	9	9
AVERAGE WAVEFRONT (C-AVG)	7.476	6.976
RMS WAVEFRONT (C-RMS)	7.755	7.213
CRITERION		RMS WAVEFRONT
METHOD USED		CM AND GPS
NUMBER OF GRID POINTS (N)		42
NUMBER OF ELEMENTS (NON-RIGID)		40
NUMBER OF RIGID ELEMENTS PROCESSED		0
NUMBER OF COMPONENTS		1
MAXIMUM NODAL DEGREE		8
MINIMUM NODAL DEGREE		3
NUMBER OF UNIQUE EDGES		131
MATRIX DENSITY, PERCENT		17.234
NUMBER OF POINTS OF ZERO DEGREE		0
NUMBER OF RIGID ELEMENT MPC EQUATIONS		0
NUMBER OF MPC EQUATIONS PROCESSED		0
PUNCH OUTPUT		SEQGP CARDS

*** ALL BANDIT STATISTICS USE GRID POINT, RATHER THAN D-O-F, CONNECTIVITY AND INCLUDE MATRIX DIAGONAL TERMS.

*** STATISTICS SUCH AS C-MAX, C-AVG, C-RMS, AND N SHOULD EACH BE MULTIPLIED BY THE AVERAGE NUMBER OF D-O-F PER GRID POINT BEFORE ESTIMATING NASTRAN TIME AND CORE REQUIREMENTS.

*** NASTRAN LEVEL 17 DECOMPOSITION TIME ESTIMATES (REAL, SYMMETRIC, NO SPILL) FOR CDC MODEL 6400 CONFIG = 6

AVG. NO. OF DOF/NODE -	1	2	3	4	5	6	
DECOMP. TIME EST. -	1	1	1	2	3	4	SECONDS

NUMBER OF CALLS TO PACK/UNPACK 6318

```
TOTAL CP TIME IN BANDIT        2.057   SECONDS
END OF BANDIT JOB.
```

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP HEAT
SOL 1,0
TIME 10
$
$   THE FOLLOWING COMMENTS ARE READ BY BANDIT, WHICH RESEQUENCES THE
$        GRID POINTS FOR REDUCED RMS WAVEFRONT (IF POSSIBLE)
$        AND GENERATES SEQGP CARDS.
$   TO BE READ BY BANDIT, $ CARDS MUST APPEAR SOMEWHERE BEFORE THE
$        BEGIN BULK CARD.
$
$SEQUENCE   YES
$GRID      50
$CONFIG     6
CEND
```

```
                         C A S E    C O N T R O L   D E C K   E C H O
 CARD
 COUNT
   1      TITLE=NASTRAN COURSE - - - DEMO. PROB. 1D
   2      SUBTITLE=LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)
   3      SPC=21
   4      OLOAD=ALL
   5      DISP=ALL
   6      LOAD=21
   7        SPCFORCE=ALL
   8        FORCE=ALL
   9      BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		17			1.	0.0	0.0	1	
2-	CBAR	101		1	2					+B101
3-	+B101			-1.5		0.25	-1.5		0.25	
4-	CBAR	102		2	3					+B102
5-	+B102			-1.5		0.25	-1.5		0.25	
6-	CBAR	103		3	4					+B103
7-	+B103			-1.5		0.25	-1.5		0.25	
8-	CBAR	104		4	5					+B104
9-	+B104			-1.5		0.25	-1.5		0.25	
10-	CBAR	105		5	6					+B105
11-	+B105			-1.5		0.25	-1.5		0.25	
12-	CBAR	141		41	42					+B141
13-	+B141			-1.5			-1.5			
14-	CBAR	142		42	43					+B142
15-	+B142			-1.5			-1.5			
16-	CBAR	143		43	44					+B143
17-	+B143			-1.5			-1.5			
18-	CBAR	144		44	45					+B144
19-	+B144			-1.5			-1.5			
20-	CBAR	145		45	46					+B145
21-	+B145			-1.5			-1.5			
22-	CNGRNT	1	2	THRU	5					
23-	CNGRNT	1	11	THRU	15					
24-	CNGRNT	1	21	THRU	25					
25-	CNGRNT	1	31	THRU	35					
26-	CNGRNT	1	41	THRU	45					
27-	CNGRNT	1	51	THRU	55					
28-	CNGRNT	101	102	THRU	105					
29-	CNGRNT	141	142	THRU	145					
30-	CORD2C	16		0.0	0.0	0.0	0.0	0.0	1.	+COR16
31-	+COR16	1.	0.	0.						
32-	CQUAD2	1	3	1	2	12	11			
33-	CQUAD2	2	3	2	3	13	12			
34-	CQUAD2	3	3	3	4	14	13			
35-	CQUAD2	4	3	4	5	15	14			
36-	CQUAD2	5	3	5	6	16	15			
37-	CQUAD2	11	3	11	12	222	21			
38-	CQUAD2	12	3	12	13	23	222			
39-	CQUAD2	13	3	13	14	24	23			
40-	CQUAD2	14	3	14	15	25	24			
41-	CQUAD2	15	3	15	16	26	25			
42-	CQUAD2	21	3	21	222	32	31			
43-	CQUAD2	22	3	222	23	33	32			
44-	CQUAD2	23	3	23	24	34	33			
45-	CQUAD2	24	3	24	25	35	34			
46-	CQUAD2	25	3	25	26	36	35			
47-	CQUAD2	31	3	31	32	42	41			
48-	CQUAD2	32	3	32	33	43	42			
49-	CQUAD2	33	3	33	34	44	43			
50-	CQUAD2	34	3	34	35	45	44			

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
51-	CQUAD2	35	3	35	36	46	45			
52-	CQUAD2	41	3	41	42	52	51			
53-	CQUAD2	42	3	42	43	53	52			
54-	CQUAD2	43	3	43	44	54	53			
55-	CQUAD2	44	3	44	45	55	54			
56-	CQUAD2	45	3	45	46	56	55			
57-	CQUAD2	51	3	51	52	62	61			
58-	CQUAD2	52	3	52	53	63	62			
59-	CQUAD2	53	3	53	54	64	63			
60-	CQUAD2	54	3	54	55	65	64			
61-	CQUAD2	55	3	55	56	66	65			
62-	GRDSET		16							
63-	GRID	1		60.	0.0	0.0				
64-	GRID	2		60.	8.	0.0				
65-	GRID	3		60.	16.	0.0				
66-	GRID	4		60.	24.	0.0				
67-	GRID	5		60.	32.	0.0				
68-	GRID	6		60.	40.	0.0				
69-	GRID	11		60.	0.0	8.				
70-	GRID	12		60.	8.	8.				
71-	GRID	13		60.	16.	8.				
72-	GRID	14		60.	24.	8.				
73-	GRID	15		60.	32.	8.				
74-	GRID	16		60.	40.	8.				
75-	GRID	21		60.	0.0	16.				
76-	GRID	23		60.	16.	16.				
77-	GRID	24		60.	24.	16.				
78-	GRID	25		60.	32.	16.				
79-	GRID	26		60.	40.	16.				
80-	GRID	31		60.	0.0	24.				
81-	GRID	32		60.	8.	24.				
82-	GRID	33		60.	16.	24.				
83-	GRID	34		60.	24.	24.				
84-	GRID	35		60.	32.	24.				
85-	GRID	36		60.	40.	24.				
86-	GRID	41		60.	0.0	32.				
87-	GRID	42		60.	8.	32.				
88-	GRID	43		60.	16.	32.				
89-	GRID	44		60.	24.	32.				
90-	GRID	45		60.	32.	32.				
91-	GRID	46		60.	40.	32.				
92-	GRID	51		60.	0.0	40.				
93-	GRID	52		60.	8.	40.				
94-	GRID	53		60.	16.	40.				
95-	GRID	54		60.	24.	40.				
96-	GRID	55		60.	32.	40.				
97-	GRID	56		60.	40.	40.				
98-	GRID	61		60.	0.0	48.				
99-	GRID	62		60.	8.	48.				
100-	GRID	63		60.	16.	48.				

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
101-	GRID	64		60.	24.	48.				
102-	GRID	65		60.	32.	48.				
103-	GRID	66		60.	40.	48.				
104-	GRID	222		60.	8.	16.				+
105-	MAT4	21	7.175-4							
106-	PBAR	17	21	1.	.3333	2.083-2	7.048-2			+P1
107-	+P1	-1.	0.25	-1.	-0.25					+P1*()
108-	+P1*()	0.67	0.67							
109-	PQUAD2	3	21	1.						
110-	QHBDY	29	LINE	2.5-3	1.	6	16			
111-	QHBDY	29	LINE	2.5-3	1.	16	26			
112-	QHBDY	29	LINE	2.5-3	1.	26	36			
113-	QHBDY	29	LINE	2.5-3	1.	36	46			
114-	QHBDY	29	LINE	2.5-3	1.	46	56			
115-	QHBDY	29	LINE	2.5-3	1.	56	66			
116-	SEQGP	1	1	2	2	3	3	4	4	11 7
117-	SEQGP	5	5	6	6	41	28	42	29	
118-	SEQGP	12	8	11	7	13	9	14	10	
119-	SEQGP	15	11	16	12	222	14	21	13	
120-	SEQGP	23	15	24	16	25	17	26	18	
121-	SEQGP	32	20	31	19	33	21	34	22	
122-	SEQGP	35	23	36	24	52	36	51	35	
123-	SEQGP	43	30	44	31	45	32	46	25	
124-	SEQGP	53	37	54	33	55	33	56	26	
125-	SEQGP	62	41	61	40	63	42	64	39	
126-	SEQGP	65	34	66	27					
127-	SPC	21	1	1	32.	2	1	32.		
128-	SPC	21	3	1	32.	4	1	32.		
129-	SPC	21	5	1	32.	6	1	32.		
	ENDDATA									

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE 34 STARTING WITH ID 101

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE 18 STARTING WITH ID 1

*** SYSTEM INFORMATION MESSAGE 3107. EMGOLD IS PROCESSING ELEMENTS OF TYPE = 18, BEGINNING WITH ELEMENT ID = 1

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK HKLL      ( N =   36 )
           TIME ESTIMATE=      1         C AVG =    6        PC AVG =    0  SPILL GROUPS =    0           S AVG *     1
         ADDITIONAL CORE= -28464         C MAX =    8         PCMAX =    0     PC GROUPS =    0  PREFACE LOOPS *     1

                              METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .0
                              METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .1
```

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -2.7941241E-13

                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0
                                   METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .0

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

T E M P E R A T U R E   V E C T O R

POINT ID.	TYPE	ID VALUE	ID+1 VALUE	ID+2 VALUE	ID+3 VALUE	ID+4 VALUE	ID+5 VALUE
1	S	3.200000E+01	3.200000E+01	3.200000E+01	3.200000E+01	3.200000E+01	3.200000E+01
11	S	5.153322E+01	5.237106E+01	5.505218E+01	6.020407E+01	6.946321E+01	8.732445E+01
21	S	6.953592E+01					
23	S	7.561764E+01	8.465568E+01	9.906949E+01	1.219971E+02		
31	S	8.475727E+01	8.676235E+01	9.297142E+01	1.039910E+02	1.208986E+02	1.452729E+02
41	S	9.631585E+01	9.862638E+01	1.057014E+02	1.179472E+02	1.359078E+02	1.597948E+02
51	S	1.031261E+02	1.055946E+02	1.131183E+02	1.260313E+02	1.448273E+02	1.701268E+02
61	S	1.054268E+02	1.079457E+02	1.156128E+02	1.287419E+02	1.478066E+02	1.733949E+02
222	S	7.105850E+01					

L O A D   V E C T O R

POINT ID.	TYPE	ID VALUE	ID+1 VALUE	ID+2 VALUE	ID+3 VALUE	ID+4 VALUE	ID+5 VALUE
6	S	1.000000E-02					
16	S	2.000000E-02					
26	S	2.000000E-02					
36	S	2.000000E-02					
46	S	2.000000E-02					
56	S	2.000000E-02					
66	S	1.000000E-02					

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

POINT ID.	TYPE	ID VALUE	ID+1 VALUE	ID+2 VALUE	ID+3 VALUE	ID+4 VALUE	ID+5 VALUE
1	S	-7.332322E-03	-1.529365E-02	-1.730652E-02	-2.117432E-02	-2.812566E-02	-3.076753E-02

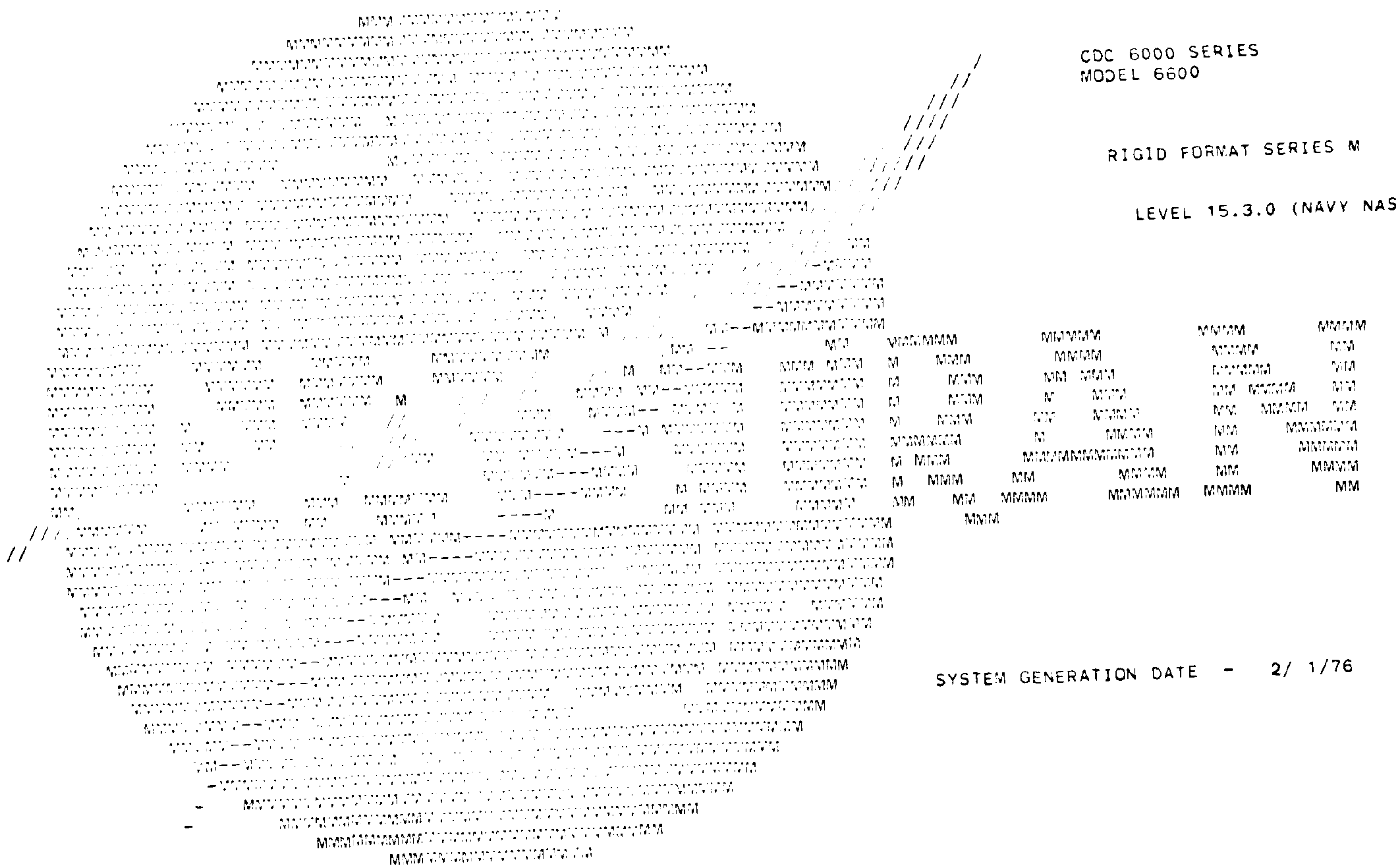
F I N I T E E L E M E N T T E M P E R A T U R E G R A D I E N T S A N D F L U X E S

ELEMENT-ID	EL-TYPE	X-GRADIENT	Y-GRADIENT	Z-GRADIENT	X-FLUX	Y-FLUX	Z-FLUX
101	BAR	0.			0.		
102	BAR	0.			0.		
103	BAR	0.			0.		
104	BAR	0.			0.		
105	BAR	0.			0.		
141	BAR	2.760241E-01			-1.980473E-04		
142	BAR	8.452097E-01			-6.064380E-04		
143	BAR	1.462920E+00			-1.049645E-03		
144	BAR	2.145626E+00			-1.539486E-03		
145	BAR	2.853619E+00			-2.047471E-03		

F I N I T E   E L E M E N T   T E M P E R A T U R E   G R A D I E N T S   A N D   F L U X E S

ELEMENT-ID	EL-TYPE	X-GRADIENT	Y-GRADIENT	Z-GRADIENT	X-FLUX	Y-FLUX	Z-FLUX
1	QUAD2	5.004531E-02	2.444017E+00		-3.590751E-05	-1.789457E-03	
2	QUAD2	1.601430E-01	2.713452E+00		-1.149062E-04	-1.947261E-03	
3	QUAD2	3.077305E-01	3.203516E+00		-2.207967E-04	-2.298523E-03	
4	QUAD2	5.530635E-01	4.104205E+00		-3.968230E-04	-2.944767E-03	
5	QUAD2	1.066881E+00	5.799229E+00		-7.654869E-04	-4.160947E-03	
11	QUAD2	1.409911E-01	2.293144E+00		-1.011611E-04	-1.645224E-03	
12	QUAD2	4.462110E-01	2.467631E+00		-3.201564E-04	-1.770561E-03	
13	QUAD2	8.333089E-01	2.828034E+00		-5.953297E-04	-2.020093E-03	
14	QUAD2	1.413964E+00	3.378441E+00		-1.014519E-03	-2.424204E-03	
15	QUAD2	2.436384E+00	4.017434E+00		-1.748105E-03	-2.862509E-03	
21	QUAD2	2.107124E-01	1.932425E+00		-1.511861E-04	-1.386802E-03	
22	QUAD2	6.569408E-01	2.051727E+00		-4.713550E-04	-1.472114E-03	
23	QUAD2	1.184393E+00	2.278629E+00		-8.498022E-04	-1.634916E-03	
24	QUAD2	1.870820E+00	2.572711E+00		-1.342314E-03	-1.845920E-03	
25	QUAD2	2.825422E+00	2.819056E+00		-2.027240E-03	-2.022674E-03	
31	QUAD2	2.577748E-01	1.463913E+00		-1.849561E-04	-1.050358E-03	
32	QUAD2	7.934327E-01	1.537129E+00		-5.693238E-04	-1.102890E-03	
33	QUAD2	1.389075E+00	1.647843E+00		-9.970917E-04	-1.196713E-03	
34	QUAD2	2.082733E+00	1.810340E+00		-1.494361E-03	-1.298919E-03	
35	QUAD2	2.882728E+00	1.845049E+00		-2.068358E-03	-1.324282E-03	
41	QUAD2	2.854647E-01	8.011551E-01		-2.048209E-04	-6.178788E-04	
42	QUAD2	8.720063E-01	8.390719E-01		-6.256045E-04	-6.450841E-04	
43	QUAD2	1.502771E+00	9.698091E-01		-1.078236E-03	-6.951205E-04	
44	QUAD2	2.195527E+00	1.062772E+00		-1.575291E-03	-7.625030E-04	
45	QUAD2	2.937992E+00	1.203220E+00		-2.108009E-03	-8.633104E-04	
51	QUAD2	2.979129E-01	2.907382E-01		-2.137525E-04	-2.086046E-04	
52	QUAD2	9.073674E-01	3.028464E-01		-6.510361E-04	-2.172923E-04	
53	QUAD2	1.555537E+00	3.253200E-01		-1.116098E-03	-2.334171E-04	
54	QUAD2	2.261476E+00	3.556228E-01		-1.622609E-03	-2.551594E-04	
55	QUAD2	3.039618E+00	3.904653E-01		-2.180926E-03	-2.801568E-04	

* * * END OF JOB * * *



CDC 6000 SERIES
MODEL 6600

RIGID FORMAT SERIES M

LEVEL 15.3.0 (NAVY NASTRAN)

SYSTEM GENERATION DATE - 2/ 1/76

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEVO
APP DISP
SOL 1,0
  ALTER 121 $    R.F. 1, NAVY,NASTRAN LEVEL 15
$      STRESS AVERAGING AT GRID POINTS
  STRSAVG EQEXIN,OES1/OESAVG $
  OFP OESAVG,,,,, //V,N,CARDNO $
  SAVE CARDNO $
  ENDALTER $
TIME 10
CEND
```

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 1E
  2      SUBTITLE=2-D POISSON EQUATION (TORSION OF TRIANGULAR PRISM)
  3      SPC=13
  4      LOAD=12
  5      DISP=ALL
  6      STRESS=ALL
  7      BEGIN BULK
```

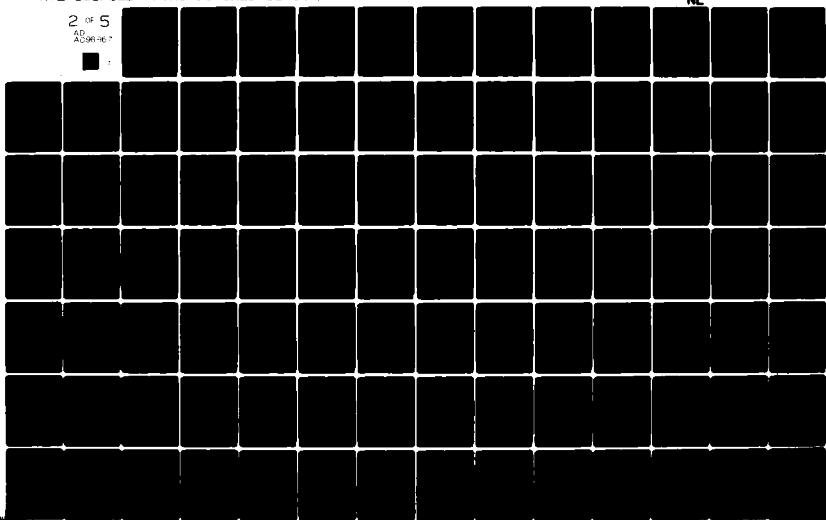
S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	AXPISO	1								
2-	CIS2D8	1	1	3	1	11	13	2	8	+1
3-	+1	12	9	3						
4-	CIS2D8	2	1	5	3	13	15	4	9	+2
5-	+2	14	10	3						
6-	CIS2D8	3	1	7	5	15	24	6	10	+3
7-	+3	19	16	3						
8-	CIS2D8	4	1	13	11	20	22	12	17	+4
9-	+4	21	18	3						
10-	CIS2D8	5	1	15	13	22	24	14	18	+5
11-	+5	23	19	3						
12-	CIS2D8	6	1	22	20	27	29	21	25	+6
13-	+6	28	26	3						
14-	CIS2D8	7	1	24	22	29	35	23	26	+7
15-	+7	32	30	3						
16-	CIS2D8	8	1	29	27	33	35	28	31	+8
17-	+8	34	32	3						
18-	CIS2D8	9	1	35	33	37	40	34	36	+9
19-	+9	39	38	3						
20-	GRAV	12		6.4	1.0					
21-	GRDSET							23456		
22-	GRID	1								
23-	GRID	2			.00433					
24-	GRID	3			.017321					
25-	GRID	4			.025981					
26-	GRID	5			.034641					
27-	GRID	6			.043301					
28-	GRID	7			.051962					
29-	GRID	8		.0075						
30-	GRID	9		.0075	.01299					
31-	GRID	10		.0075	.030311					
32-	GRID	11		.015						
33-	GRID	12		.015	.00433					
34-	GRID	13		.015	.00866					
35-	GRID	14		.015	.017321					
36-	GRID	15		.015	.025981					
37-	GRID	16		.015	.043301					
38-	GRID	17		.0225						
39-	GRID	18		.0225	.01299					
40-	GRID	19		.0225	.030311					
41-	GRID	20		.03						
42-	GRID	21		.03	[illegible]					
43-	GRID	22		.03	.017321					
44-	GRID	23		.03	.025981					
45-	GRID	24		.03	.034641					
46-	GRID	25		.0375						
47-	GRID	26		.0375	.01299					
48-	GRID	27		.045						
49-	GRID	28		.045	.00433					
50-	GRID	29		.045	.00866					

AD-A096 867 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT.(U)
FEB 81 G C EVERSTINE, M M HURWITZ

UNCLASSIFIED DTNSRDC/CMLD-81-04 NL

2 OF 5
AD
A096867



S O R T E D   B U L K   D A T A   E C H O

```
CARD
COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
  51-        GRID    30              .045    .025981
  52-        GRID    31              .0525
  53-        GRID    32              .0525   .01299
  54-        GRID    33              .06
  55-        GRID    34              .06     .00866
  56-        GRID    35              .06     .017321
  57-        GRID    36              .0675
  58-        GRID    37              .075
  59-        GRID    38              .075    .00866
  60-        GRID    39              .0825
  61-        GRID    40              .09
  62-        MAT7    11      1.E-5   1.0             1.0
  63-        PARAM   COUPMASS1
  64-        PIS2D8  1       11      1.0
  65-        SPC1    13      1       1       THRU    7
  66-        SPC1    13      1       16      24      30      35      38      40
             ENDDATA
```

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

```
*** USER INFORMATION MESSAGE 3028, B =    11 C =     0 R =    10

*** USER INFORMATION MESSAGE 3027

DECOMPOSITION TIME ESTIMATE IS      0
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .1
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .0
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD    1 EPSILON SUB E = -1.1918880E-13
                                        METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .1
                                        METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .1
```

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	0.0	0.0	0.0	0.0	0.0
4	G	0.0	0.0	0.0	0.0	0.0	0.0
5	G	0.0	0.0	0.0	0.0	0.0	0.0
6	G	0.0	0.0	0.0	0.0	0.0	0.0
7	G	0.0	0.0	0.0	0.0	0.0	0.0
8	G	9.148006E-04	0.0	0.0	0.0	0.0	0.0
9	G	8.468326E-04	0.0	0.0	0.0	0.0	0.0
10	G	5.493240E-04	0.0	0.0	0.0	0.0	0.0
11	G	1.494524E-03	0.0	0.0	0.0	0.0	0.0
12	G	1.485610E-03	0.0	0.0	0.0	0.0	0.0
13	G	1.441069E-03	0.0	0.0	0.0	0.0	0.0
14	G	1.253230E-03	0.0	0.0	0.0	0.0	0.0
15	G	9.551931E-04	0.0	0.0	0.0	0.0	0.0
16	G	0.0	0.0	0.0	0.0	0.0	0.0
17	G	1.809913E-03	0.0	0.0	0.0	0.0	0.0
18	G	1.608960E-03	0.0	0.0	0.0	0.0	0.0
19	G	7.385438E-04	0.0	0.0	0.0	0.0	0.0
20	G	1.925476E-03	0.0	0.0	0.0	0.0	0.0
21	G	1.795069E-03	0.0	0.0	0.0	0.0	0.0
22	G	1.435857E-03	0.0	0.0	0.0	0.0	0.0
23	G	8.559042E-04	0.0	0.0	0.0	0.0	0.0
24	G	0.0	0.0	0.0	0.0	0.0	0.0
25	G	1.840002E-03	0.0	0.0	0.0	0.0	0.0
26	G	1.508283E-03	0.0	0.0	0.0	0.0	0.0
27	G	1.626475E-03	0.0	0.0	0.0	0.0	0.0
28	G	1.564896E-03	0.0	0.0	0.0	0.0	0.0
29	G	1.429483E-03	0.0	0.0	0.0	0.0	0.0
30	G	0.0	0.0	0.0	0.0	0.0	0.0
31	G	1.299340E-03	0.0	0.0	0.0	0.0	0.0
32	G	8.481366E-04	0.0	0.0	0.0	0.0	0.0
33	G	9.785313E-04	0.0	0.0	0.0	0.0	0.0
34	G	7.152656E-04	0.0	0.0	0.0	0.0	0.0
35	G	0.0	0.0	0.0	0.0	0.0	0.0
36	G	6.086437E-04	0.0	0.0	0.0	0.0	0.0
37	G	3.121271E-04	0.0	0.0	0.0	0.0	0.0
38	G	0.0	0.0	0.0	0.0	0.0	0.0
39	G	7.868756E-05	0.0	0.0	0.0	0.0	0.0
40	G	0.0	0.0	0.0	0.0	0.0	0.0

G R I D   P O I N T   S T R E S S E S   F O R   I S 2 D 8   E L E M E N T S

ELEMENT ID.	NO.OF GRID PTS.	NO.OF STRESSES	GRID PT	COORD. SYS ID.	SIG-X	SIG-Y	TAU-XY
1	8	3	3	0	-1.2966E-01	1.2966E-01	6.7163E-04
			1	0	-1.4441E-01	1.4441E-01	2.3735E-03
			11	0	-5.4003E-02	5.4004E-02	-3.4373E-03
			13	0	-5.5382E-02	5.5382E-02	1.3076E-02
			2	0	-1.3822E-01	1.3822E-01	-2.0445E-04
			8	0	-9.9752E-02	9.9753E-02	6.9279E-03
			12	0	-5.9863E-02	5.9863E-02	6.5814E-03
			9	0	-9.3285E-02	9.3285E-02	4.8933E-03
2	8	3	5	0	-8.2806E-02	8.2807E-02	2.8098E-07
			3	0	-1.2975E-01	1.2975E-01	2.7250E-07
			13	0	-5.3545E-02	5.3545E-02	1.5325E-02
			15	0	-2.1009E-02	2.1009E-02	4.0780E-02
			4	0	-1.0995E-01	1.0995E-01	2.7673E-07
			9	0	-8.9827E-02	8.9828E-02	1.0813E-02
			14	0	-4.0952E-02	4.0953E-02	2.8051E-02
			10	0	-5.0089E-02	5.0090E-02	2.3540E-02
3	8	3	7	0	-2.0988E-04	2.0988E-04	-7.3364E-10
			5	0	-8.2387E-02	8.2387E-02	-1.4243E-07
			15	0	-2.5626E-02	2.5627E-02	3.4157E-02
			24	0	6.6829E-02	-6.6829E-02	1.1507E-01
			6	0	-3.9200E-02	3.9200E-02	-1.8894E-07
			10	0	-4.6985E-02	4.6985E-02	2.9241E-02
			19	0	1.8614E-02	-1.8614E-02	7.8058E-02
			16	0	3.5777E-02	-3.5777E-02	6.1804E-02
4	8	3	13	0	-5.3572E-02	5.3572E-02	1.4645E-02
			11	0	-5.5374E-02	5.5374E-02	-2.9664E-03
			20	0	-2.0867E-03	2.0867E-03	2.3040E-03
			22	0	1.4304E-02	-1.4304E-02	5.4558E-02
			12	0	-5.8370E-02	5.8370E-02	5.8390E-03
			17	0	-2.8730E-02	2.8730E-02	-4.8870E-03
			21	0	7.2141E-03	-7.2141E-03	2.8434E-02
			18	0	-2.0337E-02	2.0337E-02	3.5824E-02
5	8	3	15	0	-2.9450E-02	2.9450E-02	4.0781E-02
			13	0	-5.3965E-02	5.3966E-02	1.5326E-02
			22	0	1.6338E-02	-1.6338E-02	5.1036E-02
			24	0	6.7007E-02	-6.7007E-02	1.1477E-01
			14	0	-4.7231E-02	4.7231E-02	2.8052E-02
			18	0	-1.5795E-02	1.5795E-02	2.7957E-02
			23	0	3.6147E-02	-3.6147E-02	8.2901E-02
			19	0	2.1794E-02	-2.1794E-02	7.2550E-02
6	8	3	22	0	1.1754E-02	-1.1754E-02	5.4529E-02
			20	0	2.8597E-03	-2.8598E-03	1.9344E-03
			27	0	3.7007E-02	-3.7007E-02	5.4036E-03
			29	0	4.3738E-02	-4.3738E-02	4.0102E-02
			21	0	4.8872E-03	-4.8872E-03	2.8265E-02
			25	0	1.9933E-02	-1.9934E-02	2.2389E-03
			28	0	4.0530E-02	-4.0530E-02	2.2753E-02
			26	0	2.8619E-02	-2.8620E-02	4.8830E-02

G R I D   P O I N T   S T R E S S E S   F O R   I S 2 D 8   E L E M E N T S

ELEMENT ID.	NO.OF GRID PTS.	NO.OF STRESSES	GRID PT	COORD. SYS ID.	SIG-X	SIG-Y	TAU-XY
7	8	3	24	0	6.5926E-02	-6.5926E-02	1.1477E-01
			22	0	1.0403E-02	-1.0403E-02	5.1037E-02
			29	0	3.9850E-02	-3.9850E-02	3.4434E-02
			35	0	6.5578E-02	-6.5578E-02	1.1305E-01
			23	0	4.1493E-02	-4.1494E-02	8.2902E-02
			26	0	3.2525E-02	-3.2525E-02	5.5551E-02
			32	0	5.1180E-02	-5.1180E-02	7.6409E-02
			30	0	6.8350E-02	-6.8350E-02	1.1841E-01
8	8	3	29	0	3.6646E-02	-3.6646E-02	3.9984E-02
			27	0	4.4039E-02	-4.4040E-02	3.6493E-03
			33	0	4.2353E-02	-4.2353E-02	5.3270E-03
			35	0	6.8162E-02	-6.8162E-02	1.0858E-01
			28	0	3.2981E-02	-3.2982E-02	2.1816E-02
			31	0	4.3196E-02	-4.3196E-02	-5.7456E-03
			34	0	5.7560E-02	-5.7560E-02	5.6959E-02
			32	0	5.1873E-02	-5.1874E-02	7.5209E-02
9	8	3	35	0	6.2432E-02	-6.2432E-02	1.0759E-01
			33	0	5.3595E-02	-5.3595E-02	6.4184E-03
			37	0	3.9000E-02	-3.9001E-02	1.3957E-02
			40	0	1.4283E-03	-1.4284E-03	6.2481E-03
			34	0	5.2776E-02	-5.2776E-02	5.5132E-02
			36	0	4.4131E-02	-4.4131E-02	-2.2622E-03
			39	0	2.2381E-02	-2.2381E-02	-6.8875E-03
			38	0	4.0359E-02	-4.0359E-02	6.9645E-02

MAXIMUM VALUES FOR STRESS SIG-X (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
-1.4440959E-01	1	1
-1.3821839E-01	1	2
-1.2974992E-01	2	3
-1.2966321E-01	1	3

MAXIMUM VALUES FOR STRESS SIG-Y (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
1.4441031E-01	1	1
1.3821908E-01	1	2
1.2975057E-01	2	3
1.2966386E-01	1	3

MAXIMUM VALUES FOR STRESS SIG-Z (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
0.	0	0
0.	0	0
0.	0	0
0.	0	0

MAXIMUM VALUES FOR STRESS TAU-XY (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
1.1841114E-01	7	30
1.1507381E-01	3	24
1.1476679E-01	7	24
1.1476611E-01	5	24

MAXIMUM VALUES FOR STRESS TAU-YZ (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
0.	0	0
0.	0	0
0.	0	0
0.	0	0

MAXIMUM VALUES FOR STRESS TAU-ZX (SUBCASE 1)

STRESS VALUE	ELEMENT ID	GRID NUMBER
0.	0	0
0.	0	0
0.	0	0
0.	0	0

A V E R A G E   G R I D   P O I N T   S T R E S S E S   F O R   2 - D   I S O P A R A M E T R I C   E L E M E N T S

GRID PT.	COORD. SYS.ID.	SIG-X	SIG-Y	TAU-XY	PRINCIPAL STRESS ANGLE	PRINCIPAL STRESSES MAJOR	PRINCIPAL STRESSES MINOR	MAX SHEAR
1	0	-1.444096E-01	1.444103E-01	2.373450E-03	89.5	1.444298E-01	-1.444291E-01	1.444295E-01
2	0	-1.382184E-01	1.382191E-01	-2.044504E-04	-90.0	1.382192E-01	-1.382185E-01	1.382189E-01
3	0	-1.297066E-01	1.297072E-01	3.359503E-04	89.9	1.297077E-01	-1.297070E-01	1.297073E-01
4	0	-1.099515E-01	1.099520E-01	2.767270E-07	90.0	1.099520E-01	-1.099515E-01	1.099518E-01
5	0	-8.259665E-02	8.259706E-02	6.927251E-08	90.0	8.259706E-02	-8.259665E-02	8.259686E-02
6	0	-3.919981E-02	3.920000E-02	-1.889391E-07	-90.0	3.920000E-02	-3.919981E-02	3.919990E-02
7	0	-2.098814E-04	2.098825E-04	-7.338357E-10	-90.0	2.098825E-04	-2.098814E-04	2.098820E-04
8	0	-9.975214E-02	9.975264E-02	6.927877E-03	88.0	9.999293E-02	-9.999243E-02	9.999268E-02
9	0	-9.155602E-02	9.155646E-02	7.853389E 03	87.5	9.189269E-02	-9.189222E-02	9.189245E-02
10	0	-4.853702E-02	4.853727E-02	2.639057E-02	75.7	5.524790E-02	-5.524765E-02	5.524778E-02
11	0	-5.468840E-02	5.468867E-02	-3.201816E-03	-88.3	5.478232E-02	-5.478205E-02	5.478218E-02
12	0	-5.911651E-02	5.911681E-02	6.210243E-03	87.0	5.944211E-02	-5.944181E-02	5.944196E-02
13	0	-5.411593E-02	5.411625E-02	1.459784E-02	82.5	5.605056E-02	-5.605029E-02	5.605043E-02
14	0	-4.409149E-02	4.409171E-02	2.805137E-02	73.8	5.225859E-02	-5.225837E-02	5.225848E-02
15	0	-2.536176E-02	2.536198E-02	3.857260E-02	61.7	4.616355E-02	-4.616342E-02	4.616349E-02
16	0	3.577685E-02	-3.577702E-02	6.180352E-02	30.0	7.141184E-02	-7.141202E-02	7.141193E-02
17	0	-2.873014E-02	2.873024E-02	-4.886998E-03	-85.2	2.914296E-02	-2.914282E-02	2.914289E-02
18	0	-1.806593E-02	1.806602E-02	3.189019E-02	59.8	3.665197E-02	-3.665188E-02	3.665192E-02
19	0	2.020396E-02	-2.020405E-02	7.530419E-02	37.5	7.796740E-02	-7.796750E-02	7.796745E-02
20	0	3.865064E-04	-3.865093E-04	2.149194E-03	39.9	2.183675E-03	-2.183676E-03	2.183675E-03
21	0	6.050608E-03	-6.050638E-03	2.834940E-02	39.0	2.898789E-02	-2.898792E-02	2.898790E-02
22	0	1.319952E-02	-1.319959E-02	5.278933E-02	38.0	5.441509E-02	-5.441515E-02	5.441512E-02
23	0	3.882020E-02	-3.882039E-02	8.290148E-02	32.5	9.154044E-02	-9.154064E-02	9.154054E-02
24	0	6.658731E-02	-6.658764E-02	1.148689E-01	29.9	1.327732E-01	-1.327735E-01	1.327733E-01
25	0	1.993349E-02	-1.993359E-02	2.238872E-03	3.2	2.005883E-02	-2.005893E-02	2.005888E-02
26	0	3.057231E-02	-3.057247E-02	5.219062E-02	29.8	6.048572E-02	-6.048588E-02	6.048580E-02
27	0	4.052331E-02	-4.052351E-02	4.526421E-03	3.2	4.077532E-02	-4.077552E-02	4.077542E-02
28	0	3.675560E-02	-3.675579E-02	2.228458E-02	15.6	4.298343E-02	-4.298362E-02	4.298352E-02
29	0	4.007780E-02	-4.007800E-02	3.817322E-02	21.8	5.534818E-02	-5.534838E-02	5.534828E-02
30	0	6.834990E-02	-6.835024E-02	1.184111E-01	30.0	1.367219E-01	-1.367223E-01	1.367221E-01
31	0	4.319597E-02	-4.319616E-02	-5.745587E-03	-3.8	4.357641E-02	-4.357662E-02	4.357652E-02
32	0	5.152660E-02	-5.152686E-02	7.580910E-02	27.9	9.166243E-02	-9.166268E-02	9.166255E-02
33	0	4.797364E-02	-4.797388E-02	5.872708E-03	3.5	4.833175E-02	-4.833199E-02	4.833187E-02
34	0	5.516783E-02	-5.516811E-02	5.604579E-02	22.7	7.864232E-02	-7.864259E-02	7.864245E-02
35	0	6.539045E-02	-6.539077E-02	1.097403E-01	29.6	1.277451E-01	-1.277455E-01	1.277453E-01
36	0	4.413127E-02	-4.413149E-02	-2.262196E-03	-1.5	4.418921E-02	-4.418943E-02	4.418932E-02
37	0	3.900044E-02	-3.900063E-02	1.395562E-02	9.8	4.142247E-02	-4.142267E-02	4.142257E-02
38	0	4.035873E-02	-4.035893E-02	6.964545E-02	30.0	8.049414E-02	-8.049435E-02	8.049425E-02
39	0	2.238057E-02	-2.238068E-02	-6.687540E-03	-8.6	2.341641E-02	-2.341652E-02	2.341646E-02
40	0	1.428346E-03	-1.428353E-03	6.248150E-03	38.6	6.409330E-03	-6.409337E-03	6.409334E-03

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISPLACEMENT
SOL 2,0
TIME 5
CEND
```

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 2
  2      SUBTITLE =STATIC ANALYSIS WITH INERTIA RELIEF
  3      LABEL =FIVE ELEMENT FRAME--ROD ELEMENTS  (CONC. MASSES AT 1,2,5)
  4      SPC = 1
  5      LOAD = 10
  6      SET 1 = 1
  7      SPCFORCES = 1
  8      SUBCASE 1
  9      SET 100 = 1 THRU 5 EXCEPT 3
 10      DISP = 100
 11      STRESS = ALL
 12      FORCE = ALL
 13      OLOAD(SORT2) = ALL
 14      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

```
STATIC ANALYSIS WITH INERTIA RELIEF

FIVE ELEMENT FRAME--ROD ELEMENTS  (CONC. MASSES AT 1,2,5)

                                  S O R T E D   B U L K   D A T A   E C H O
        CARD
        COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
           1-        CONM2   97      2               2.5E2
           2-        CONM2   98      5               2.5E2
           3-        CONM2   99      1               5.E2
           4-        CROD    1       1       1       2       2       1       1       5
           5-        CROD    3       1       2       4       4       1       5       4
           6-        CROD    5       2       2       5
           7-        FORCE1  10      4       1.+3    1       4
           8-        GRDSET                                                  3456
           9-        GRID    1               .0      C.0
          10-        GRID    2               -1.0    -1.0
          11-        GRID    4               .0      -2.0
          12-        GRID    5               1.0     -1.0
          13-        MAT1    7       1.+7            .3
          14-        MAT1    8       1.+7            .3
          15-        PROD    1       7       1.
          16-        PROD    2       8       1.
          17-        SPC1    1       1       1
          18-        SPC1    1       1       4
          19-        SUPORT  1       2
                     ENDDATA

      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     30 STARTING WITH ID     97

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      1 STARTING WITH ID      1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL     ( N =     5 )
          TIME ESTIMATE=       1         C AVG =      2        PC AVG =     0   SPILL GROUPS =     0          S AVG =     1
        ADDITIONAL CORE= -28494          C MAX =      4         PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =     1
                                           METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD     0 EPSILON SUB E =  1.2644055E-14
                                          METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
                                          MPYAD--NULL MATRIX PRODUCT
                                          METHOD 3 T ,NBR PASSES =    1,EST. TIME =        .0

                                          MPYAD--NULL MATRIX PRODUCT
                                          METHOD 3 T ,NBR PASSES =    1,EST. TIME =        .0
                                          METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
                                          METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
                                          METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -2.0666220E-14


                                          MPYAD--NULL MATRIX PRODUCT
                                          METHOD 3 T ,NBR PASSES =    1,EST. TIME =        .0

*** SYSTEM WARNING MESSAGE 2184,  STRESS OR FORCE REQUESTS FOR ELEMENT TYPE =          30
WILL NOT BE HONORED AS THIS ELEMENT IS NOT A STRUCTURAL ELEMENT.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

STATIC ANALYSIS WITH INERTIA RELIEF

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5) SUBCASE 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	7.500000E-05	-1.457107E-04	0.0	0.0	0.0	0.0
4	G	0.0	-3.621320E-04	0.0	0.0	0.0	0.0
5	G	-7.500000E-05	-1.457107E-04	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

SUBCASE 1

L O A D V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	0.0	0.0	0.0	0.0	0.0
4	G	0.0	-1.000000E+03	0.0	0.0	0.0	0.0
5	G	0.0	0.0	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5) SUBCASE 1

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-3.637979E-12	1.000000E+03	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

SUBCASE 1

F O R C E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL FORCE	TORQUE	ELEMENT ID.	AXIAL FORCE	TORQUE
1	3.535534E+02	0.0	2	3.535534E+02	0.0
3	7.071068E+02	0.0	4	7.071068E+02	0.0
5	-7.500000E+02	0.0			

STATIC ANALYSIS WITH INERTIA RELIEF

FIVE ELEMENT FRAME--ROD ELEMENTS (CCNC. MASSES AT 1,2,5) SUBCASE 1

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	3.535534E+02		0.0		2	3.535534E+02		0.0	
3	7.071068E+02		0.0		4	7.071068E+02		0.0	
5	-7.500000E+02		0.0						

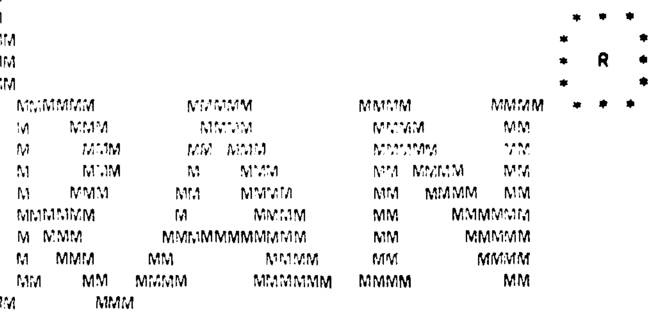
* * * END OF JOB * * *

```
NASTRAN FILES=(NPTP,OPTP,PLT2)
```

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.7



SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 3,0
TIME 10
$    THE FOLLOWING CARD REQUESTS THIS RUN TO BE CHECKPOINTED.
CHKPNT YES
$        THE FILES PARAMETER ON THE NASTRAN CARD IS NOT AVAILABLE
$                         ON SPERRY/NASTRAN.
CEND
```

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

```
ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM
   RESTART   NASTRAN ,DEMO    , 2/ 9/81,   60020,
```

INVERSE POWER METHOD

```
                       C A S E    C O N T R O L   D E C K   E C H O
CARD
COUNT
  1      TITLE=NASTRAN COURSE   - - -  DEMO. PROB. 3
  2      SUBTITLE=NORMAL MODES ANALYSIS
  3      LABEL=INVERSE POWER METHOD
  4      ECHO      =    BOTH
  5       SPC= 11
  6      METHOD=41
  7        DISP=  ALL
  8      BEGIN BULK
```

INVERSE POWER METHOD

```
                         I N P U T   B U L K   D A T A   D E C K   E C H O

                 .   1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
                 EIGR          41      INV     0.      300.    30      4       0       1.-3+EIGR41
                 +EIGR41       MAX
                 BAROR                 31                      0.      1.      0.      1
                 CBAR          1               1       2
                 CBAR          2               2       3
                 CBAR          3               3       4
                 CBAR          4               4       5
                 CBAR          5               5       6
                 CBAR          6               6       7
                 CBAR          7               7       8
                 CBAR          8               8       9
                 CBAR          9               9       10
                 CBAR          10              10      11
                 CBAR          11              11      12
                 CBAR          12              12      13
                 CBAR          13              13      14
                 CBAR          14              14      15
                 CBAR          15              15      16
                 CBAR          16              16      17
                 CBAR          17              17      18
                 CBAR          18              18      19
                 CBAR          19              19      20
                 CBAR          20              20      21
                 GRDSET                                                345
                 GRID    1             0.
                 GRID          2               5.
                 GRID          3               10.
                 GRID          4               15.
                 GRID          5               20.
                 GRID          6               25.
                 GRID          7               30.
                 GRID          8               35.
                 GRID          9               40.
                 GRID          10              45.
                 GRID          11              50.
                 GRID          12              55.
                 GRID          13              60.
                 GRID          14              65.
                 GRID          15              70.
                 GRID          16              75.
                 GRID          17              80.
                 GRID          18              85.
                 GRID          19              90.
                 GRID          20              95.
                 GRID          21              100.
                 MAT1    32      30.+6           0.3     7.324-4                         +STEEL
                 PBAR    31      32      0.30680 7.490-3 7.490-3 1.498-2                 +P31
                 +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
                 +P31A   0.75    0.75    0.
                 SPC1    11      126     1
```

```
                    I N P U T   B U L K   D A T A   D E C K   E C H O
        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
        ENDDATA

     TOTAL COUNT=   51

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

INVERSE POWER METHOD

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT     .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
    1-     BAROR           31                      0.0       1.        0.0       1
    2-     CBAR    1                   1         2
    3-     CBAR    2                   2         3
    4-     CBAR    3                   3         4
    5-     CBAR    4                   4         5
    6-     CBAR    5                   5         6
    7-     CBAR    6                   6         7
    8-     CBAR    7                   7         8
    9-     CBAR    8                   8         9
   10-     CBAR    9                   9         10
   11-     CBAR    10                  10        11
   12-     CBAR    11                  11        12
   13-     CBAR    12                  12        13
   14-     CBAR    13                  13        14
   15-     CBAR    14                  14        15
   16-     CBAR    15                  15        16
   17-     CBAR    16                  16        17
   18-     CBAR    17                  17        18
   19-     CBAR    18                  18        19
   20-     CBAR    19                  19        20
   21-     CBAR    20                  20        21
   22-     EIGR    41      INV         0.0       300.      30        4         0         1.-3      +EIGR41
   23-     +EIGR41     MAX
   24-     GRDSET                                                              345
   25-     GRID    1                   0.0
   26-     GRID    2                   5.
   27-     GRID    3                   10.
   28-     GRID    4                   15.
   29-     GRID    5                   20.
   30-     GRID    6                   25.
   31-     GRID    7                   30.
   32-     GRID    8                   35.
   33-     GRID    9                   40.
   34-     GRID    10                  45.
   35-     GRID    11                  50.
   36-     GRID    12                  55.
   37-     GRID    13                  60.
   38-     GRID    14                  65.
   39-     GRID    15                  70.
   40-     GRID    16                  75.
   41-     GRID    17                  80.
   42-     GRID    18                  85.
   43-     GRID    19                  90.
   44-     GRID    20                  95.
   45-     GRID    21                  100.
   46-     MAT1    32      30.+6                 .3        7.324-4                                 +STEEL
   47-     PBAR    31      32          .30680    7.490-3   7.490-3   1.498-2                       +P31
   48-     +P31    0.3125  0.          -0.3125   0.        0.        0.3125    0.        0.        +P31A
   49-     +P31A   0.75    0.75        0.
   50-     SPC1    11      126         1
```

INVERSE POWER METHOD

S O R T E D   B U L K   D A T A   E C H O

```
CARD
COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
             ENDDATA
```

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

```
INVERSE POWER METHOD
    CONTINUATION OF CHECKPOINT DICTIONARY

    1,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =       5


    2,   REENTER AT DMAP SEQUENCE NUMBER      6
    3,   GPL       ,   FLAGS = 0,   REEL =  1,   FILE =       6
         FILE GPL       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    4,   EQEXIN    ,   FLAGS = 0,   REEL =  1,   FILE =       7
         FILE EQEXIN    CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    5,   GPDT      ,   FLAGS = 0,   REEL =  1,   FILE =       8
         FILE GPDT      CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    6,   BGPDT     ,   FLAGS = 0,   REEL =  1,   FILE =       9
         FILE BGPDT     CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    7,   SIL       ,   FLAGS = 0,   REEL =  1,   FILE =      10
         FILE SIL       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    8,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =      11
    9,   CSTM      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE CSTM      CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   10,   REENTER AT DMAP SEQUENCE NUMBER      8
   11,   ECT       ,   FLAGS = 0,   REEL =  1,   FILE =      12
         FILE ECT       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   12,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =      13

   13,   REENTER AT DMAP SEQUENCE NUMBER     22
   14,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =      14
   15,   PLTPAR    ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE PLTPAR    CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   16,   GPSETS    ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE GPSETS    CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   17,   ELSETS    ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE ELSETS    CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   18,   REENTER AT DMAP SEQUENCE NUMBER     24
   19,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =      15
   20,   GPTT      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE GPTT      CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   21,   REENTER AT DMAP SEQUENCE NUMBER     29
   22,   EST       ,   FLAGS = 0,   REEL =  1,   FILE =      16
         FILE EST       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   23,   GPECT     ,   FLAGS = 0,   REEL =  1,   FILE =      17
         FILE GPECT     CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   24,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =      18
   25,   GEI       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE GEI       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   26,   OGPST     ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE OGPST     CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1

   27,   REENTER AT DMAP SEQUENCE NUMBER     34
   28,   KELM      ,   FLAGS = 0,   REEL =  1,   FILE =      19
```

```
29,     KDICT    ,    FLAGS = 0,    REEL =  1,    FILE =      20
        FILE KDICT     CONTAINS            1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
30,     MELM     ,    FLAGS = 0,    REEL =  1,    FILE =      21
        FILE MELM      CONTAINS            3 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
31,     MDICT    ,    FLAGS = 0,    REEL =  1,    FILE =      22
        FILE MDICT     CONTAINS            1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
32,     XVPS     ,    FLAGS = 0,    REEL =  1,    FILE =      23

33,     REENTER AT DMAP SEQUENCE NUMBER    37
34,     KGGX     ,    FLAGS = 0,    REEL =  1,    FILE =      24
        FILE KGGX      CONTAINS            2 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
35,     GPST     ,    FLAGS = 0,    REEL =  1,    FILE =      25
        FILE GPST      CONTAINS            1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
36,     XVPS     ,    FLAGS = 0,    REEL =  1,    FILE =      26

37,     REENTER AT DMAP SEQUENCE NUMBER    41
38,     MGG      ,    FLAGS = 0,    REEL =  1,    FILE =      27
        FILE MGG       CONTAINS            1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
39,     XVPS     ,    FLAGS = 0,    REEL =  1,    FILE =      28

40,     REENTER AT DMAP SEQUENCE NUMBER    47
41,     KGGX     ,    FLAGS = 4,    REEL =  1,    FILE =      24
        FILE KGGX      CONTAINS            0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

```
INVERSE POWER METHOD

    ADDITIONS TO CHECKPOINT DICTIONARY

   42,   KGG      ,   FLAGS = 4,   REEL =  1,   FILE =      24
         FILE KGG      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   43,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      29


   44,   REENTER AT DMAP SEQUENCE NUMBER     57
   45,   USET     ,   FLAGS = 0,   REEL =  1,   FILE =      30
         FILE USET     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   46,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      31
   47,   KRR      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE KRR      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   48,   KLR      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE KLR      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   49,   DM       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE DM       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   50,   MLR      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE MLR      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   51,   MR       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE MR       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   52,   GM       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE GM       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   53,   RG       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE RG       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   54,   GO       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE GO       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   55,   KFS      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE KFS      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   56,   QG       ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE QG       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   57,   ASET     ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE ASET     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   58,   REENTER AT DMAP SEQUENCE NUMBER     65
   59,   KNN      ,   FLAGS = 4,   REEL =  1,   FILE =      24
         FILE KNN      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   60,   MGG      ,   FLAGS = 4,   REEL =  1,   FILE =      27
         FILE MGG      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   61,   MNN      ,   FLAGS = 4,   REEL =  1,   FILE =      27
         FILE MNN      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   62,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      32

   63,   REENTER AT DMAP SEQUENCE NUMBER     73
   64,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      33
   65,   KFF      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE KFF      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   66,   MFF      ,   FLAGS = 0,   REEL =  0,   FILE =       0
         FILE MFF      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   67,   REENTER AT DMAP SEQUENCE NUMBER     76
   68,   KFS      ,   FLAGS = 0,   REEL =  1,   FILE =      34
         FILE KFS      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   69,   KFF      ,   FLAGS = 0,   REEL =  1,   FILE =      35
         FILE KFF      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

```
 70,   MFF      ,   FLAGS = 0,   REEL =  1,   FILE =     36
       FILE MFF      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 71,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     37

 72,   REENTER AT DMAP SEQUENCE NUMBER    80
 73,   KFF      ,   FLAGS = 4,   REEL =  1,   FILE =     35
       FILE KFF      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS
 74,   KAA      ,   FLAGS = 4,   REEL =  1,   FILE =     35
       FILE KAA      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 75,   MFF      ,   FLAGS = 4,   REEL =  1,   FILE =     36
       FILE MFF      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 76,   MAA      ,   FLAGS = 4,   REEL =  1,   FILE =     36
       FILE MAA      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 77,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     38


 78,   REENTER AT DMAP SEQUENCE NUMBER   100
 79,   EED      ,   FLAGS = 0,   REEL =  1,   FILE =     39
       FILE EED      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 80,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     40

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =      0   SPILL GROUPS =     0                S AVG =       1
             ADDITIONAL CORE= -23722             C MAX =      5          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =      0   SPILL GROUPS =     0                S AVG =       1
             ADDITIONAL CORE= -23722             C MAX =      5          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =      0   SPILL GROUPS =     0                S AVG =       1
             ADDITIONAL CORE= -23722             C MAX =      5          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =      0   SPILL GROUPS =     0                S AVG =       1
             ADDITIONAL CORE= -23722             C MAX =      5          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =      0   SPILL GROUPS =     0                S AVG =       1
             ADDITIONAL CORE= -23722             C MAX =      5          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1
                                                   METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .1
                                                   METHOD 3 T ,NBR PASSES =   1,EST. TIME =       .0

 81,   REENTER AT DMAP SEQUENCE NUMBER   104
 82,   LAMA     ,   FLAGS = 0,   REEL =  1,   FILE =     41
       FILE LAMA     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 83,   PHIA     ,   FLAGS = 0,   REEL =  1,   FILE =     42
       FILE PHIA     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 84,   MI       ,   FLAGS = 0,   REEL =  1,   FILE =     43
       FILE MI       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

INVERSE POWER METHOD

ADDITIONS TO CHECKPOINT DICTIONARY

```
85,   OEIGS     ,   FLAGS = 0,   REEL =  1,   FILE =     44
      FILE OEIGS    CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
86,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =     45
```

INVERSE POWER METHOD

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

NUMBER OF EIGENVALUES EXTRACTED	4
NUMBER OF STARTING POINTS USED	1
NUMBER OF STARTING POINT MOVES	0
NUMBER OF TRIANGULAR DECOMPOSITIONS	5
TOTAL NUMBER OF VECTOR ITERATIONS	39
REASON FOR TERMINATION	6
LARGEST OFF-DIAGONAL MODAL MASS TERM	.35E-14
MODE PAIR	4 1
NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION	0

INVERSE POWER METHOD

R E A L E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	4	4.815432E+03	6.939331E+01	1.104429E+01	5.695112E-03	2.742442E+01
2	3	3.754747E+04	1.937717E+02	3.083972E+01	5.808644E-03	2.180999E+02
3	2	1.433458E+05	3.786103E+02	6.025770E+01	5.987773E-03	8.583220E+02
4	1	3.893342E+05	6.239665E+02	9.930736E+01	6.249210E-03	2.433031E+03

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

INVERSE POWER METHOD

ADDITIONS TO CHECKPOINT DICTIONARY

```
 87,   REENTER AT DMAP SEQUENCE NUMBER   112
 88,   PHIG     ,   FLAGS = 0,   REEL =  1,   FILE =     46
       FILE PHIG     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 89,   QG       ,   FLAGS = 0,   REEL =  1,   FILE =     47
       FILE QG       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 90,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     48

 91,   REENTER AT DMAP SEQUENCE NUMBER   121
 92,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     49
 93,   SIP      ,   FLAGS = 0,   REEL =  0,   FILE =      0
       FILE SIP      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 94,   BGPDP    ,   FLAGS = 0,   REEL =  0,   FILE =      0
       FILE BGPDP    CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


 95,   REENTER AT DMAP SEQUENCE NUMBER   125
 96,   BGPDP    ,   FLAGS = 0,   REEL =  1,   FILE =     50
       FILE BGPDP    CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 97,   SIP      ,   FLAGS = 0,   REEL =  1,   FILE =     51
       FILE SIP      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 98,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     52
```

NORMAL MODES ANALYSIS

INVERSE POWER METHOD
EIGENVALUE = 4.815432E+03

R E A L   E I G E N V E C T O R   N O .   1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.812109E-21	-2.541131E-02	0.0	0.0	0.0	-9.708344E-03
3	G	3.613045E-21	-9.280123E-02	0.0	0.0	0.0	-1.679409E-02
4	G	5.391705E-21	-1.841280E-01	0.0	0.0	0.0	-2.129275E-02
5	G	7.137122E-21	-3.016429E-01	0.0	0.0	0.0	-2.328907E-02
6	G	8.838535E-21	-4.181738E-01	0.0	0.0	0.0	-2.293063E-02
7	G	1.048545E-20	-5.274578E-01	0.0	0.0	0.0	-2.043395E-02
8	G	1.206773E-20	-6.144867E-01	0.0	0.0	0.0	-1.608363E-02
9	G	1.357559E-20	-6.658312E-01	0.0	0.0	0.0	-1.022490E-02
10	G	1.499976E-20	-7.199144E-01	0.0	0.0	0.0	-3.250695E-03
11	G	1.633145E-20	-7.172078E-01	0.0	0.0	0.0	4.415817E-03
12	G	1.756245E-20	-6.753321E-01	0.0	0.0	0.0	1.234208E-02
13	G	1.868517E-20	-5.940472E-01	0.0	0.0	0.0	2.010901E-02
14	G	1.969269E-20	-4.751258E-01	0.0	0.0	0.0	2.733465E-02
15	G	2.057880E-20	-3.221097E-01	0.0	0.0	0.0	3.369732E-02
16	G	2.133803E-20	-1.309533E-01	0.0	0.0	0.0	3.895713E-02
17	G	2.196571E-20	6.543377E-02	0.0	0.0	0.0	4.297501E-02
18	G	2.245796E-20	2.877321E-01	0.0	0.0	0.0	4.572844E-02
19	G	2.281175E-20	5.208269E-01	0.0	0.0	0.0	4.732361E-02
20	G	2.302491E-20	7.594742E-01	0.0	0.0	0.0	4.800379E-02
21	G	2.309610E-20	1.000000E+00	0.0	0.0	0.0	4.815432E-02

NORMAL MODES ANALYSIS

INVERSE POWER METHOD
EIGENVALUE = 3.754747E+04

R E A L E I G E N V E C T O R N O . 2

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-2.841736E-21	6.769309E-02	0.0	0.0	0.0	2.497113E-02
3	G	-5.665951E-21	2.301428E-01	0.0	0.0	0.0	3.795774E-02
4	G	-8.455233E-21	4.268432E-01	0.0	0.0	0.0	3.965870E-02
5	G	-1.119238E-20	6.108273E-01	0.0	0.0	0.0	3.162030E-02
6	G	-1.386053E-20	7.331271E-01	0.0	0.0	0.0	1.628218E-02
7	G	-1.644322E-20	7.608795E-01	0.0	0.0	0.0	-3.201886E-03
8	G	-1.892452E-20	7.000963E-01	0.0	0.0	0.0	-2.331184E-02
9	G	-2.128915E-20	5.343604E-01	0.0	0.0	0.0	-4.060504E-02
10	G	-2.352252E-20	3.033807E-01	0.0	0.0	0.0	-5.217508E-02
11	G	-2.561057E-20	2.917395E-02	0.0	0.0	0.0	-5.604650E-02
12	G	-2.754131E-20	-2.432396E-01	0.0	0.0	0.0	-5.143865E-02
13	G	-2.930196E-20	-4.721841E-01	0.0	0.0	0.0	-3.885452E-02
14	G	-3.068194E-20	-6.215020E-01	0.0	0.0	0.0	-1.997258E-02
15	G	-3.227153E-20	-6.658181E-01	0.0	0.0	0.0	2.640227E-03
16	G	-3.346215E-20	-5.939408E-01	0.0	0.0	0.0	2.596280E-02
17	G	-3.444647E-20	-4.098583E-01	0.0	0.0	0.0	4.703882E-02
18	G	-3.521842E-20	-1.310669E-01	0.0	0.0	0.0	6.351274E-02
19	G	-3.577323E-20	2.156322E-01	0.0	0.0	0.0	7.411529E-02
20	G	-3.610749E-20	6.008235E-01	0.0	0.0	0.0	7.904515E-02
21	G	-3.621914E-20	1.000000E+00	0.0	0.0	0.0	8.021846E-02

NORMAL MODES ANALYSIS

INVERSE POWER METHOD
EIGENVALUE = 1.433458E+05

R E A L E I G E N V E C T O R N O . 3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.357540E-20	-1.2[illegible]2547E-01	0.0	0.0	0.0	-4.466526E-02
3	G	2.706710E-20	-3.9[illegible]5511E-01	0.0	0.0	0.0	-5.680902E-02
4	G	4.039192E-20	-6.[illegible]E-01	0.0	0.0	0.0	-4.108798E-02
5	G	5.346770E-20	-7.7418[illegible]E-01	0.0	0.0	0.0	-6.840634E-03
6	G	6.621382E-20	-7.[illegible]E-01	0.0	0.0	0.0	3.318449E-02
7	G	7.855171E-20	-4.5[illegible]E-01	0.0	0.0	0.0	6.571035E-02
8	G	9.040528E-20	-7.9[illegible]47[illegible]E-02	0.0	0.0	0.0	8.0322[illegible]0E-02
9	G	1.017015E-19	3.[illegible]E-01	0.0	0.0	0.0	7.223278E-02
10	G	1.123706E-19	6.[illegible]E-01	0.0	0.0	0.0	4.351453E-02
11	G	1.223470E-19	7.2[illegible]03[illegible]E-01	0.0	0.0	0.0	2.412442E-03
12	G	1.315690E-19	6.[illegible]211[illegible]E-01	0.0	0.0	0.0	-3.911161E-02
13	G	1.399798E-19	3.5[illegible]737E-01	0.0	0.0	0.0	-6.888540E-02
14	G	1.475277E-19	-2.311[illegible]E-02	0.0	0.0	0.0	-7.806863E-02
15	G	1.541659E-19	-3.[illegible]42[illegible]E-01	0.0	0.0	0.0	-6.369122E-02
16	G	1.598537E-19	-6.2[illegible]72E-01	0.0	0.0	0.0	-2.943286E-02
17	G	1.645560E-19	-6.[illegible]E-01	0.0	0.0	0.0	1.561108E-02
18	G	1.682437E-19	-4.727451E-01	0.0	0.0	0.0	5.986574E-02
19	G	1.708941E-19	-8.362660E-02	0.0	0.0	0.0	9.314320E-02
20	G	1.724909E-19	4.326236E-01	0.0	0.0	0.0	1.104585E-01
21	G	1.730243E-19	1.000000E+00	0.0	0.0	0.0	1.149382E-01

NORMAL MODES ANALYSIS

INVERSE POWER METHOD
EIGENVALUE = 3.893342E+05

R E A L E I G E N V E C T O R N O . 4

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.636531E-16	1.992146E-01	0.0	0.0	0.0	6.709018E-02
3	G	1.123831E-15	5.602358E-01	0.0	0.0	0.0	6.640411E-02
4	G	1.677080E-15	7.827637E-01	0.0	0.0	0.0	1.642157E-02
5	G	2.219969E-15	6.973187E-01	0.0	0.0	0.0	-5.017815E-02
6	G	2.749210E-15	3.126544E-01	0.0	0.0	0.0	-9.738030E-02
7	G	3.261482E-15	-2.046647E-01	0.0	0.0	0.0	-1.006096E-01
8	G	3.753644E-15	-6.173526E-01	0.0	0.0	0.0	-5.723939E-02
9	G	4.222664E-15	-7.336524E-01	0.0	0.0	0.0	1.272672E-02
10	G	4.665649E-15	-5.003375E-01	0.0	0.0	0.0	7.641400E-02
11	G	5.079869E-15	-2.879323E-02	0.0	0.0	0.0	1.037953E-01
12	G	5.462769E-15	4.573123E-01	0.0	0.0	0.0	8.199552E-02
13	G	5.811989E-15	7.278348E-01	0.0	0.0	0.0	2.144224E-02
14	G	6.125376E-15	6.555482E-01	0.0	0.0	0.0	-4.902427E-02
15	G	6.400998E-15	2.764223E-01	0.0	0.0	0.0	-9.574026E-02
16	G	6.637156E-15	-2.260455E-01	0.0	0.0	0.0	-9.602785E-02
17	G	6.832394E-15	-6.060463E-01	0.0	0.0	0.0	-4.866156E-02
18	G	6.985508E-15	-6.679126E-01	0.0	0.0	0.0	2.611048E-02
19	G	7.095555E-15	-3. 98106E-01	0.0	0.0	0.0	9.728805E-02
20	G	7.161855E-15	2.563226E-01	0.0	0.0	0.0	1.400819E-01
21	G	7.184001E-15	1.000000E+00	0.0	0.0	0.0	1.522487E-01

* * * END OF JOB * * *

CDC CYBER SERIES
MODEL 173

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 3,0
TIME 10
CEND
```

GIVENS METHOD

```
                              C A S E    C O N T R O L    D E C K    E C H O
   CARD
   COUNT
     1       TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 3A
     2       SUBTITLE=NORMAL MODES ANALYSIS
     3       LABEL=GIVENS METHOD
     4        SPC= 11
     5       METHOD=42
     6         DISP=ALL
     7       BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

GIVENS METHOD

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	EIGR	42	GIV	0.0	500.		4		1.-3	+EIGR42
23-	+EIGR42	MAX								
24-	GRDSET							345		
25-	GRID	1		0.0						
26-	GRID	2		5.						
27-	GRID	3		10.						
28-	GRID	4		15.						
29-	GRID	5		20.						
30-	GRID	6		25.						
31-	GRID	7		30.						
32-	GRID	8		35.						
33-	GRID	9		40.						
34-	GRID	10		45.						
35-	GRID	11		50.						
36-	GRID	12		55.						
37-	GRID	13		60.						
38-	GRID	14		65.						
39-	GRID	15		70.						
40-	GRID	16		75.						
41-	GRID	17		80.						
42-	GRID	18		85.						
43-	GRID	19		90.						
44-	GRID	20		95.						
45-	GRID	21		100.						
46-	MAT1	32	30.+6		.3	7.324-4				+STEEL
47-	OMIT1	6	2	THRU	21					
48-	PBAR	31	32	.30680	7.490-3	7.490-3	1.498-2			+P31
49-	+P31	0.3125	0.	-0.3125	0.	0.	0.3125	0.	0.	+P31A
50-	+P31A	0.75	0.75	0.						

```
NORMAL MODES ANALYSIS

GIVENS METHOD

                                        S O R T E D   B U L K   D A T A   E C H O
          CARD
          COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
            51-        SPC1    11      126     1
                       ENDDATA


      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KOO      ( N =    20 )
           TIME ESTIMATE=       1           C AVG =      1          PC AVG =      0  SPILL GROUPS =     0           S AVG =       1
         ADDITIONAL CORE= -28503            C MAX =      2           PCMAX =      0     PC GROUPS =     0  PREFACE LOOPS =       1
                                              METHOD 1 T ,NBR PASSES =   1,EST. TIME =       .1
                                              MPYAD--NULL MATRIX PRODUCT
                                              MPYAD--NULL MATRIX PRODUCT
                                              MPYAD--NULL MATRIX PRODUCT


*** USER INFORMATION MESSAGE 2016, GIVENS TIME ESTIMATE IS        3 SECONDS.
                                PROBLEM SIZE IS       40, SPILL WILL OCCUR FOR THIS CORE AT A PROBLEM SIZE OF      248 .

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK MAA      ( N =    40 )
           TIME ESTIMATE=       1           C AVG =      1          PC AVG =      0  SPILL GROUPS =     0           S AVG =       1
         ADDITIONAL CORE= -23739            C MAX =      1           PCMAX =      0     PC GROUPS =     0  PREFACE LOOPS =       1
                                              METHOD 2 NT,NBR PASSES =   1,EST. TIME =       .1
                                              METHOD 2 T ,NBR PASSES =   1,EST. TIME =       .1
                                              METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .0
                                              METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .0
                                              METHOD 3 T ,NBR PASSES =   1,EST. TIME =       .0
```

```
E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (GIVENS METHOD)

     NUMBER OF EIGENVALUES EXTRACTED . . . . . . . .          40

     NUMBER OF EIGENVECTORS COMPUTED . . . . . . . .           4

     NUMBER OF EIGENVALUE CONVERGENCE FAILURES . .             0

     NUMBER OF EIGENVECTOR CONVERGENCE FAILURES. .             0

     REASON FOR TERMINATION. . . . . . . . . . . . .           1

     LARGEST OFF-DIAGONAL MODAL MASS TERM. . . . .    1.24E-14

               MODE PAIR. . . . . . . . . . . . . .            4
                                               . . .           3

     NUMBER OF OFF-DIAGONAL MODAL MASS
          TERMS FAILING CRITERION. . . . . . . . .             0
```

NORMAL MODES ANALYSIS

GIVENS METHOD

R E A L E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	40	1.233355E+02	1.11[illegible]E+01	1.767519E+00	5.628510E-03	6.941951E-01
2	39	4.815432E+03	6.9[illegible]E+01	1.104429E+01	5.695221E-03	2.742495E+01
3	38	3.754747E+04	1.937717E-02	3.083972E+01	5.808538E-03	2.180959E+02
4	37	1.433458E+05	3.7[illegible]03E+02	6.025770E+01	5.968062E-03	8.583633E+02
5	36	3.893342E+05	6.2[illegible]E+02	9.9307[illegible]E+01	0.0	0.0
6	35	8.632084E+05	9.2[illegible]E+02	1.4786[illegible]E+02	0.0	0.0
7	34	1.672191E+06	1.2[illegible]E+03	2.058084E+02	0.0	0.0
8	33	2.941194E+06	1.71[illegible]E+03	2.729493E+02	0.0	0.0
9	32	4.809841E+06	2.1[illegible]135E+03	3.490485E+02	0.0	0.0
10	31	7.427281E+06	2.72[illegible]E+03	4.337456E+02	0.0	0.0
11	20	1.010158E+07	3.17[illegible]E+03	5.058419E+02	0.0	0.0
12	30	1.094304E+07	3.30[illegible]E+03	5.264887E+02	0.0	0.0
13	29	1.549126E+07	3.93[illegible]E+03	6.264170E+02	0.0	0.0
14	28	2.116505E+07	4.60[illegible]E+03	7.322001E+02	0.0	0.0
15	27	2.777776E+07	5.26[illegible]E+03	8.418343E+02	0.0	0.0
16	26	3.581118E+07	5.[illegible]245E+03	9.524221E+02	0.0	0.0
17	25	4.435794E+07	6.660175E+03	1.060000E+03	0.0	0.0
18	24	5.307959E+07	7.285574E+03	1.159535E+03	0.0	0.0
19	23	6.121702E+07	7.824131E+03	1.245249E+03	0.0	0.0
20	22	6.788837E+07	8.239470E+03	1.311352E+03	0.0	0.0
21	21	7.227353E+07	8.501384E+03	1.353037E+03	0.0	0.0
22	19	9.054035E+07	9.515301E+03	1.514407E+03	0.0	0.0
23	18	2.494390E+08	1.579[illegible]E+04	2.513630E+03	0.0	0.0
24	17	4.828831E+08	2.1974[illegible]E+04	3.497367E+03	0.0	0.0
25	16	7.851252E+08	2.802009E+04	4.459535E+03	0.0	0.0
26	15	1.148723E+09	3.389282E+04	5.394209E+03	0.0	0.0
27	14	1.564723E+09	3.95[illegible]E+04	6.295620E+03	0.0	0.0
28	13	2.022883E+09	4.497[illegible]E+04	7.158226E+03	0.0	0.0
29	12	2.511921E+09	5.011307E+04	7.9766[illegible]E+03	0.0	0.0
30	11	3.019795E+09	5.4[illegible]E+04	8.7459[illegible]E+03	0.0	0.0
31	10	3.534030E+09	5.9447[illegible]E+04	9.461357E+03	0.0	0.0
32	9	4.041874E+09	6.357574E+04	1.011839E+04	0.0	0.0
33	8	4.530912E+09	6.731205E+04	1.071305E+04	0.0	0.0
34	7	4.989072E+09	7.063337E+04	1.124165E+04	0.0	0.0
35	6	5.405073E+09	7.351920E+04	1.170094E+04	0.0	0.0
36	5	5.768671E+09	7.595176E+04	1.208810E+04	0.0	0.0
37	4	6.070913E+09	7.791606E+04	1.240073E+04	0.0	0.0
38	3	6.304357E+09	7.939[illegible]E+04	1.263690E+04	0.0	0.0
39	2	6.463255E+09	8.039437E+04	1.279516E+04	0.0	0.0
40	1	6.543694E+09	8.089310E+04	1.287454E+04	0.0	0.0

METHOD 1 NT,NBR PASSES = 1,EST. TIME = .1
METHOD 1 T ,NBR PASSES = 1,EST. TIME = .0

NORMAL MODES ANALYSIS

GIVENS METHOD
EIGENVALUE = 1.233355E-02

R E A L E I G E N V E C T O R N O . 1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	4.292938E-03	0.0	0.0	0.0	1.696253E-03
3	G	0.0	1.676538E-02	0.0	0.0	0.0	3.271764E-03
4	G	0.0	3.641375E-02	0.0	0.0	0.0	4.726696E-03
5	G	0.0	[illegible]	0.0	0.0	0.0	6.061463E-03
6	G	0.0	9.723344E-02	0.0	0.0	0.0	7.276839E-03
7	G	0.0	[illegible]	0.0	0.0	0.0	8.374067E-03
8	G	0.0	1.807841E-01	0.0	0.0	0.0	9.354948E-03
9	G	0.0	2.247751E-01	0.0	0.0	0.0	1.022193E-02
10	G	0.0	2.808226E-01	0.0	0.0	0.0	1.097817E-02
11	G	0.0	3.349924E-01	0.0	0.0	0.0	1.162762E-02
12	G	0.0	3.909323E-01	0.0	0.0	0.0	1.217509E-02
13	G	0.0	4.660760E-01	0.0	0.0	0.0	1.262625E-02
14	G	0.0	5.260484E-01	0.0	0.0	0.0	1.298775E-02
15	G	0.0	5.907195E-01	0.0	0.0	0.0	1.326718E-02
16	G	0.0	6.576002E-01	0.0	0.0	0.0	1.347313E-02
17	G	0.0	7.253466E-01	0.0	0.0	0.0	1.361525E-02
18	G	0.0	7.936658E-01	0.0	0.0	0.0	1.370417E-02
19	G	0.0	8.623206E-01	0.0	0.0	0.0	1.375163E-02
20	G	0.0	9.311352E-01	0.0	0.0	0.0	1.377037E-02
21	G	0.0	1.000000E+00	0.0	0.0	0.0	1.377422E-02

NASTRAN COURSE - - - DEMO. PROB. 3A FEBRUARY 10, 1981 NASTRAN 12/15/80 PAGE 8
NORMAL MODES ANALYSIS

GIVENS METHOD
EIGENVALUE = 4.815432E+03

R E A L   E I G E N V E C T O R   N O .   2

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	-2.541262E-02	0.0	0.0	0.0	-9.708811E-03
3	G	0.0	-9.2[illegible]0537[illegible]E-02	0.0	0.0	0.0	-1.679470E-02
4	G	0.0	-1.8[illegible]1350E-01	0.0	0.0	0.0	-2.129326E-02
5	G	0.0	-3.01651[illegible]E-01	0.0	0.0	0.0	-2.328933E-02
6	G	0.0	-4.181935E-01	0.0	0.0	0.0	-2.293063E-02
7	G	0.0	-5.274671E-01	0.0	0.0	0.0	-2.043381E-02
8	G	0.0	-6.194951E-01	0.0	0.0	0.0	-1.608346E-02
9	G	0.0	-6.8[illegible]334[illegible]E-01	0.0	0.0	0.0	-1.022478E-02
10	G	0.0	-7.1[illegible]9215E-01	0.0	0.0	0.0	-3.250041E-03
11	G	0.0	-7.172147E-01	0.0	0.0	0.0	4.415881E-03
12	G	0.0	-6.75[illegible]E-01	0.0	0.0	0.0	1.234226E-02
13	G	0.0	-5.940522E-01	0.0	0.0	0.0	2.010938E-02
14	G	0.0	-4.751285E-01	0.0	0.0	0.0	2.733520E-02
15	G	0.0	-3.221095E-01	0.0	0.0	0.0	3.369794E-02
16	G	0.0	-1.399502E-01	0.0	0.0	0.0	3.895765E-02
17	G	0.0	6.543894E-02	0.0	0.0	0.0	4.297527E-02
18	G	0.0	2.877378E-01	0.0	0.0	0.0	4.572839E-02
19	G	0.0	5.208316E-01	0.0	0.0	0.0	4.732328E-02
20	G	0.0	7.594768E-01	0.0	0.0	0.0	4.800330E-02
21	G	0.0	1.000000E+00	0.0	0.0	0.0	4.815378E-02

NASTRAN COURSE - - - DEMO. PROB. 3A
NORMAL MODES ANALYSIS

FEBRUARY 10, 1981 NASTRAN 12/15/80 PAGE 9

GIVENS METHOD
EIGENVALUE = 3.754747E+04

R E A L   E I G E N V E C T O R   N O .   3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	6.769331E-02	0.0	0.0	0.0	2.497117E-02
3	G	0.0	2.301429E-01	0.0	0.0	0.0	3.795762E-02
4	G	0.0	4.278418E-01	0.0	0.0	0.0	3.965827E-02
5	G	0.0	6.108231E-01	0.0	0.0	0.0	3.161959E-02
6	G	0.0	7.381191E-01	0.0	0.0	0.0	1.628138E-02
7	G	0.0	7.608073E-01	0.0	0.0	0.0	-3.202520E-03
8	G	0.0	7.000728E-01	0.0	0.0	0.0	-2.331204E-02
9	G	0.0	5.313457E-01	0.0	0.0	0.0	-4.060470E-02
10	G	0.0	3.003701E-01	0.0	0.0	0.0	-5.217427E-02
11	G	0.0	2.917408E-02	0.0	0.0	0.0	-5.604547E-02
12	G	0.0	-2.432404E-01	0.0	0.0	0.0	-5.143791E-02
13	G	0.0	-4.721811E-01	0.0	0.0	0.0	-3.885396E-02
14	G	0.0	-6.214973E-01	0.0	0.0	0.0	-1.997250E-02
15	G	0.0	-6.658142E-01	0.0	0.0	0.0	2.639903E-03
16	G	0.0	-5.939390E-01	0.0	0.0	0.0	2.596230E-02
17	G	0.0	-4.095590E-01	0.0	0.0	0.0	4.703839E-02
18	G	0.0	-1.310692E-01	0.0	0.0	0.0	6.351255E-02
19	G	0.0	2.156793E-01	0.0	0.0	0.0	7.411538E-02
20	G	0.0	6.008220E-01	0.0	0.0	0.0	7.904542E-02
21	G	0.0	1.000000E+00	0.0	0.0	0.0	8.021878E-02

NORMAL MODES ANALYSIS

GIVENS METHOD
EIGENVALUE = 1.433458E+05

R E A L   E I G E N V E C T O R   N O .   4

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	-1.202625E-01	0.0	0.0	0.0	-4.466796E-02
3	G	0.0	-3.955740E-01	0.0	0.0	0.0	-5.681198E-02
4	G	0.0	-6.448813E-01	0.0	0.0	0.0	-4.108937E-02
5	G	0.0	-7.742163E-01	0.0	0.0	0.0	-6.839590E-03
6	G	0.0	-7.078437E-01	0.0	0.0	0.0	3.318764E-02
7	G	0.0	-4.545864E-01	0.0	0.0	0.0	6.571436E-02
8	G	0.0	-7.945175E-02	0.0	0.0	0.0	8.032622E-02
9	G	0.0	3.116041E-01	0.0	0.0	0.0	7.223421E-02
10	G	0.0	6.087079E-01	0.0	0.0	0.0	4.351374E-02
11	G	0.0	7.265220E-01	0.0	0.0	0.0	2.410000E-03
12	G	0.0	6.321208E-01	0.0	0.0	0.0	-3.911452E-02
13	G	0.0	3.545647E-01	0.0	0.0	0.0	-6.888758E-02
14	G	0.0	-2.313319E-02	0.0	0.0	0.0	-7.806933E-02
15	G	0.0	-3.676588E-01	0.0	0.0	0.0	-6.369045E-02
16	G	0.0	-6.275768E-01	0.0	0.0	0.0	-2.943125E-02
17	G	0.0	-6.643617E-01	0.0	0.0	0.0	1.561262E-02
18	G	0.0	-4.727404E-01	0.0	0.0	0.0	5.986655E-02
19	G	0.0	-8.362016E-02	0.0	0.0	0.0	9.314310E-02
20	G	0.0	4.326277E-01	0.0	0.0	0.0	1.104577E-01
21	G	0.0	1.000000E+00	0.0	0.0	0.0	1.149373E-01

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
TIME 10
SOL 3,0
   ALTER 103 $   R.F. 3, LEVEL 17
$
$         COMPUTE AND PRINT NORMALIZED MODAL MASS MATRIX.
$
   DIAGONAL MI/MISQIN/C,N,SQUARE/C,N,-0.5 $
   SMPYAD MISQIN,MI,MISQIN,,,/MINEW/C,N,3 $
   ADD A,B,C $   TO AVOID OVERLAY BUG
   MATPRN MINEW,,,, // $
   ENDALTER $
$
$         FEER METHOD RESULTS IN POOR ORTHOGONALITY OF THE HIGHER
$                   MODES.   SEE MODAL MASS MATRIX MINEW.
$
CEND
```

FEER TRIDIAGONAL REDUCTION METHOD

```
                         C A S E   C O N T R O L   D E C K   E C H O
      CARD
      COUNT
        1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 3B
        2      SUBTITLE=NORMAL MODES ANALYSIS
        3      LABEL=FEER TRIDIAGONAL REDUCTION METHOD
        4      LINES=51
        5       SPC= 11
        6      METHOD=43
        7      DISP=ALL
        8      BEGIN BULK


*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT      .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
    1-      BAROR           31                        0.0     1.      0.0     1
    2-      CBAR    1               1       2
    3-      CBAR    2               2       3
    4-      CBAR    3               3       4
    5-      CBAR    4               4       5
    6-      CBAR    5               5       6
    7-      CBAR    6               6       7
    8-      CBAR    7               7       8
    9-      CBAR    8               8       9
   10-      CBAR    9               9       10
   11-      CBAR    10              10      11
   12-      CBAR    11              11      12
   13-      CBAR    12              12      13
   14-      CBAR    13              13      14
   15-      CBAR    14              14      15
   16-      CBAR    15              15      16
   17-      CBAR    16              16      17
   18-      CBAR    17              17      18
   19-      CBAR    18              18      19
   20-      CBAR    19              19      20
   21-      CBAR    20              20      21
   22-      EIGR    43      FEER            1.E-9           3               1.-4    +EIGR43
   23-      +EIGR43 MAX
   24-      GRDSET                                                  345
   25-      GRID    1               0.0
   26-      GRID    2               5.
   27-      GRID    3               10.
   28-      GRID    4               15.
   29-      GRID    5               20.
   30-      GRID    6               25.
   31-      GRID    7               30.
   32-      GRID    8               35.
   33-      GRID    9               40.
   34-      GRID    10              45.
   35-      GRID    11              50.
   36-      GRID    12              55.
   37-      GRID    13              60.
   38-      GRID    14              65.
   39-      GRID    15              70.
   40-      GRID    16              75.
   41-      GRID    17              80.
   42-      GRID    18              85.
   43-      GRID    19              90.
   44-      GRID    20              95.
   45-      GRID    21              100.
   46-      MAT1    32      30.+6           .3      7.324-4                         +STEEL
   47-      PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
   48-      +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
   49-      +P31A   0.75    0.75    0.
   50-      SPC1    11      126     1
            ENDDATA
```

```
NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD


*** USER POTENTIALLY FATAL MESSAGE  22.
                                    POSSIBLE ERROR IN DMAP INSTRUCTION ADD        INSTRUCTION NO. 103
  DATA BLOCK NAMED A                  APPEARS AS INPUT BEFORE BEING DEFINED

*** USER POTENTIALLY FATAL MESSAGE  22.
                                    POSSIBLE ERROR IN DMAP INSTRUCTION ADD        INSTRUCTION NO. 103
  DATA BLOCK NAMED B                  APPEARS AS INPUT BEFORE BEING DEFINED

        **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1


*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK A          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK B          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK A          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK B          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.


*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK A          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

  DATA BLOCK B          IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
            TIME ESTIMATE=       1          C AVG =      4          PC AVG =      0   SPILL GROUPS =      0           S AVG =      1
          ADDITIONAL CORE= -26297           C MAX =      5          PCMAX =       0     PC GROUPS =       0  PREFACE LOOPS =     1

 USER WARNING MESSAGE 2399
ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

 USER WARNING MESSAGE 2399
ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.
```

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 USER WARNING MESSAGE 2399
ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

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ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

 USER WARNING MESSAGE 2399
ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

 USER WARNING MESSAGE 2399
ONLY THE FIRST     0 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

 USER WARNING MESSAGE 2399
ONLY THE FIRST     9 EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

*** USER INFORMATION MESSAGE 2392

       3 MORE ACCURATE EIGENSOLUTIONS THAN THE     3 REQUESTED HAVE BEEN FOUND.
    USE DIAG 16 TO DETERMINE ERROR BOUNDS

                                                  METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .1
                                                  METHOD 3 T ,NBR PASSES =    1,EST. TIME =        .1

*** USER WARNING MESSAGE 3034

ORTHOGANALITY CHECK FAILED. LARGEST TERM =  3.6968510E-01, EPSILON =  1.0000000E-04


                                                  METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
                                                  METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
```

```
FEER TRIDIAGONAL REDUCTION METHOD

   MATRIX MINEW    (GINO NAME 101 ) IS A REAL          6 COLUMN X      6 ROW SQUARE   MATRIX.

COLUMN       1       ROWS      1 THRU      6     --------------------------------------------------

  1.00000E+00  2.38986E-14 -3.03386E-15 -1.21848E-11 -2.70512E-10  5.24248E-09

COLUMN       2       ROWS      1 THRU      6     --------------------------------------------------

  2.14475E-14  1.00000E+00 -1.15032E-12 -4.16865E-10 -9.05633E-09  1.74372E-07

COLUMN       3       ROWS      1 THRU      6     --------------------------------------------------

 -3.03386E-15 -1.15152E-12  1.00000E+00 -9.31988E-07 -1.80171E-05  3.32219E-04

COLUMN       4       ROWS      1 THRU      6     --------------------------------------------------

 -1.21848E-11 -4.16865E-10 -9.31988E-07  1.00000E+00 -2.47773E-03  4.04281E-02

COLUMN       5       ROWS      1 THRU      6     --------------------------------------------------

 -2.70512E-10 -9.05633E-09 -1.80171E-05 -2.47773E-03  1.00000E+00  3.69685E-01

COLUMN       6       ROWS      1 THRU      6     --------------------------------------------------

  5.24248E-09  1.74372E-07  3.32219E-04  4.04281E-02  3.69685E-01  1.00000E+00

THE NUMBER OF NON-ZERO WORDS IN THE LONGEST RECORD =        6

THE DENSITY OF THIS MATRIX IS 100.00 PERCENT.
```

FEER TRIDIAGONAL REDUCTION METHOD

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (FEER METHOD)

```
NUMBER OF EIGENVALUES EXTRACTED . . . . . .            6
NUMBER OF STARTING POINTS USED . . . . . . .           1
NUMBER OF STARTING POINT MOVES . . . . . . .           0
NUMBER OF TRIANGULAR DECOMPOSITIONS . . . .            1
TOTAL NUMBER OF VECTOR ITERATIONS . . . . .           25

REASON FOR TERMINATION . . . . . . . . . . .           0

LARGEST OFF-DIAGONAL MODAL MASS TERM . . . .     .37E+00
                                       . . .           6
          MODE PAIR . . . . . . . . . .
                                       . . .           5

NUMBER OF OFF-DIAGONAL MODAL MASS
     TERMS FAILING CRITERION . . . . . . . .           4
```

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	1	1.233355E+02	1.1105[illegible]E+01	1.7675[illegible]E+00	5.[illegible]28510E-03	6.941951E-01
2	2	4.815432E+03	6.[illegible]E+01	1.10442[illegible]E+01	5.6[illegible]5221E-03	2.742495E+01
3	3	3.754747E+04	1.937717E+02	3.0839[illegible]E+01	5.[illegible]8658E-03	2.181004E+02
4	4	1.433458E+05	3.78[illegible]103E+02	6.025770E+01	6.041012E-03	8.659536E+02
5	5	3.893342E+05	6.239665E+02	9.930736E+01	7.630264E-03	2.970723E+03
6	6	8.632084E+05	9.290901E+02	1.478693E+02	3.841357E-03	3.315892E+03

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD

EIGENVALUE = 1.233355E+02

R E A L   E I G E N V E C T O R   N O .   1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	8.034449E-14	[illegible]	0.0	0.0	0.0	[illegible]
3	G	1.670000E-13	[illegible]	0.0	0.0	0.0	[illegible]
4	G	2.420073E-13	[illegible]	0.0	0.0	0.0	4.726696E-03
5	G	3.111946E-13	6.383613E-02	0.0	0.0	0.0	[illegible]
6	G	3.720141E-13	[illegible]	0.0	0.0	0.0	7.276839E-03
7	G	4.245670E-13	[illegible]	0.0	0.0	0.0	8.374067E-03
8	G	4.703749E-13	[illegible]	0.0	0.0	0.0	[illegible]
9	G	5.095449E-13	[illegible]	0.0	0.0	0.0	[illegible]
10	G	5.418739E-13	[illegible]	0.0	0.0	0.0	[illegible]
11	G	5.670203E-13	[illegible]	0.0	0.0	0.0	1.162762E-02
12	G	5.882790E-13	[illegible]	0.0	0.0	0.0	1.217509E-02
13	G	6.062067E-13	4.609760E-01	0.0	0.0	0.0	1.262625E-02
14	G	6.210450E-13	5.250484E-01	0.0	0.0	0.0	[illegible]
15	G	6.328945E-13	5.907195E-01	0.0	0.0	0.0	1.326718E-02
16	G	6.417099E-13	6.570002E-01	0.0	0.0	0.0	1.347313E-02
17	G	6.482334E-13	7.253488E-01	0.0	0.0	0.0	1.361525E-02
18	G	6.527653E-13	[illegible]	0.0	0.0	0.0	1.370417E-02
19	G	6.554656E-13	8.623206E-01	0.0	0.0	0.0	1.375163E-02
20	G	6.563768E-13	9.311352E-01	0.0	0.0	0.0	1.377037E-02
21	G	6.565501E-13	1.000000E+00	0.0	0.0	0.0	1.377422E-02

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD
EIGENVALUE = 4.815432E+03

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	[illegible]	[illegible]	0.0	0.0
2	G	[illegible].452728E-12	-2.[illegible]	[illegible]	[illegible]	0.0	-9.708811E-03
3	G	1.2[illegible]E-11	-9.[illegible]	[illegible]	[illegible]	0.0	-1.679470E-02
4	G	1.[illegible]E-11	-[illegible]	[illegible]	[illegible]	0.0	-2.129326E-02
5	G	2.[illegible]E-11	-[illegible]	[illegible]	[illegible]	0.0	-2.328933E-02
6	G	2.[illegible]E-11	-[illegible]	[illegible]	[illegible]	0.0	-2.293063E-02
7	G	3.[illegible]2E-11	-[illegible]	0.0	0.0	0.0	-2.043361E-02
8	G	3.[illegible]3E-11	-[illegible]	0.0	0.0	0.0	-1.608346E-02
9	G	3.7[illegible]E-11	-[illegible]	0.0	0.0	0.0	-1.022478E-02
10	G	4.02[illegible]3E-11	-7.[illegible]	0.0	0.0	0.0	-3.250641E-03
11	G	4.2[illegible]E-11	-7.[illegible]E-01	0.0	0.0	0.0	4.415881E-03
12	G	4.371[illegible]E-11	-6.[illegible]E-01	0.0	0.0	0.0	1.234226E-02
13	G	4.5[illegible]E-11	-5.[illegible]E-01	0.0	0.0	0.0	2.010938E-02
14	G	4.[illegible]E-11	-4.[illegible]E-01	0.0	0.0	0.0	2.733520E-02
15	G	4.7[illegible]0E-11	-3.[illegible]E-01	0.0	0.0	0.0	3.3[illegible]9794E-02
16	G	4.76[illegible]017E-11	-1.[illegible]502E-01	0.0	0.0	0.0	3.8[illegible]5765E-02
17	G	4.817546E-11	6.[illegible]E-02	0.0	0.0	0.0	4.297527E-02
18	G	4.851266E-11	2.677376E-01	0.0	0.0	0.0	4.572839E-02
19	G	4.871365E-11	5.208316E-01	0.0	0.0	0.0	4.732328E-02
20	G	4.878158E-11	7.5[illegible]47[illegible]E-01	0.0	0.0	0.0	4.800330E-02
21	G	4.879454E-11	1.000000E+00	0.0	0.0	0.0	4.815378E-02

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD
EIGENVALUE = 3.754747E+04

R E A L E I G E N V E C T O R N O . 3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.838161E-08	6.[illegible]E-02	0.0	0.0	0.0	2.497154E-02
3	G	1.128[illegible]2E-07	2.[illegible]E-01	0.0	0.0	0.0	3.[illegible]5815E-02
4	G	1.6332[illegible]8E-07	4.2[illegible]E-01	0.0	0.0	0.0	3.9[illegible]5[illegible]E-02
5	G	2.0[illegible]0E-07	6.1[illegible]E-01	0.0	0.0	0.0	3.1[illegible]1987E-02
6	G	2.5013[illegible]2E-07	7.[illegible]1274E-01	0.0	0.0	0.0	1.628075E-02
7	G	2.85[illegible]6E-07	7.[illegible]E-01	0.0	0.0	0.0	-3.203328E-03
8	G	3.164200E-07	7.0[illegible]E-01	0.0	0.0	0.0	-2.331204E-02
9	G	3.42[illegible]142E-07	5.[illegible]350[illegible]E-01	0.0	0.0	0.0	-4.0[illegible]0402E-02
10	G	3.6[illegible]144E-07	3.0[illegible]72E-01	0.0	0.0	0.0	-5.2[illegible]73[illegible]2E-02
11	G	3.8[illegible]74E-07	2.[illegible]E-02	0.0	0.0	0.0	-5.604617E-02
12	G	3.9[illegible]517E-07	-2.[illegible]E-01	0.0	0.0	0.0	-5.1439[illegible]E-02
13	G	4.0[illegible]E-07	-4.7[illegible]E-01	0.0	0.0	0.0	-3.885525E-02
14	G	4.181045E-07	-6.2150[illegible]E-01	0.0	0.0	0.0	-1.997309E-02
15	G	4.261253E-07	-6.[illegible]265E-01	0.0	0.0	0.0	2.640162E-03
16	G	4.321008E-07	-5.[illegible]9479E-01	0.0	0.0	0.0	2.596337E-02
17	G	4.365283E-07	-4.0[illegible]611E-01	0.0	0.0	0.0	4.703990E-02
18	G	4.3900[illegible]8E-07	-1.31[illegible]E-01	0.0	0.0	0.0	6.351366E-02
19	G	4.414496E-07	2.156877E-01	0.0	0.0	0.0	7.411541E-02
20	G	4.420789E-07	6.038274E-01	0.0	0.0	0.0	7.904452E-02
21	G	4.422012E-07	1.000000E+00	0.0	0.0	0.0	8.021760E-02

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD
EIGENVALUE = 1.433458E+05

R E A L   E I G E N V E C T O R   N O .   4

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.327159E-05	-1.285515E-01	0.0	0.0	0.0	-4.482212E-02
3	G	4.501001E-05	-3.949254E-01	0.0	0.0	0.0	-5.700409E-02
4	G	6.513956E-05	-6.508308E-01	0.0	0.0	0.0	-4.115984E-02
5	G	8.348493E-05	-7.784440E-01	0.0	0.0	0.0	-6.893194E-03
6	G	9.944469E-05	-7.106714E-01	0.0	0.0	0.0	3.300259E-02
7	G	1.140056E-04	-4.592022E-01	0.0	0.0	0.0	6.508131E-02
8	G	1.260688E-04	[illegible]	0.0	0.0	0.0	8.078560E-02
9	G	1.369614E-04	[illegible]	0.0	0.0	0.0	7.302323E-02
10	G	1.457284E-04	6.131154E-01	0.0	0.0	0.0	4.409276E-02
11	G	1.525809E-04	7.313751E-01	0.0	0.0	0.0	2.380244E-03
12	G	1.563829E-04	6.393620E-01	0.0	0.0	0.0	-3.907266E-02
13	G	1.632983E-04	3.554613E-01	0.0	0.0	0.0	-6.959138E-02
14	G	1.673543E-04	-2.541341E-02	0.0	0.0	0.0	-7.860270E-02
15	G	1.706190E-04	-3.918130E-01	0.0	0.0	0.0	-6.388034E-02
16	G	1.730579E-04	-6.316375E-01	0.0	0.0	0.0	-2.920480E-02
17	G	1.748713E-04	-6.604479E-01	0.0	0.0	0.0	1.613521E-02
18	G	1.761385E-04	-4.721386E-01	0.0	0.0	0.0	6.034024E-02
19	G	1.769016E-04	-8.150339E-02	0.0	0.0	0.0	9.324055E-02
20	G	1.771718E-04	4.342533E-01	0.0	0.0	0.0	1.102073E-01
21	G	1.772274E-04	1.000000E+00	0.0	0.0	0.0	1.145769E-01

NORMAL MODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD
EIGENVALUE = 3.893342E+05

R E A L   E I G E N V E C T O R   N O .   5

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	4.796456E-04	2.273331E-01	0.0	0.0	0.0	7.636592E-02
3	G	9.283243E-04	6.348119E-01	0.0	0.0	0.0	7.627038E-02
4	G	1.344422E-03	9.00247[illegible]E-01	0.0	0.0	0.0	2.118435E-02
5	G	1.724324E-03	8.12755[illegible]E-01	0.0	0.0	0.0	-5.711304E-02
6	G	2.0638[illegible]8E-03	3.5[illegible]6374E-01	0.0	0.0	0.0	-1.173557E-01
7	G	2.358781E-03	-2.6[illegible]0[illegible]50E-01	0.0	0.0	0.0	-1.208214E-01
8	G	2.61[illegible]992E-03	-7.4[illegible]0328E-01	0.0	0.0	0.0	-6.207311E-02
9	G	2.839020E-03	-8.417022E-01	0.0	0.0	0.0	2.553576E-02
10	G	3.023716E-03	-5.211942E-01	0.0	0.0	0.0	9.567845E-02
11	G	3.169251E-03	3.416874E-02	0.0	0.0	0.0	1.162665E-01
12	G	3.292989E-03	5.528831E-01	0.0	0.0	0.0	8.260009E-02
13	G	3.398007E-03	8.01785[illegible]E-01	0.0	0.0	0.0	1.317715E-02
14	G	3.485512E-03	6.772852E-01	0.0	0.0	0.0	-6.075912E-02
15	G	3.556010E-03	2.426036E-01	0.0	0.0	0.0	-1.050478E-01
16	G	3.609238E-03	-2.887497E-01	0.0	0.0	0.0	-9.762004E-02
17	G	3.649136E-03	-6.550043E-01	0.0	0.0	0.0	-4.205906E-02
18	G	3.677290E-03	-6.747131E-01	0.0	0.0	0.0	3.470902E-02
19	G	3.694545E-03	-3.260705E-01	0.0	0.0	0.0	1.003574E-01
20	G	3.701120E-03	2.813907E-01	0.0	0.0	0.0	1.369332E-01
21	G	3.702617E-03	1.000000E+00	0.0	0.0	0.0	1.470138E-01

FEER TRIDIAGONAL REDUCTION METHOD
EIGENVALUE = 8.632084E+05

REAL EIGENVECTOR NO. 6

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-2.880331E-03	4.241498E-01	0.0	0.0	0.0	1.321179E-01
3	G	-5.597053E-03	1.000000E+00	0.0	0.0	0.0	6.753296E-02
4	G	-8.123313E-03	9.443261E-01	0.0	0.0	0.0	-9.103248E-02
5	G	-1.044158E-02	2.152366E-01	0.0	0.0	0.0	-1.726475E-01
6	G	-1.252794E-02	-5.309093E-01	0.0	0.0	0.0	-1.014117E-01
7	G	-1.435673E-02	-7.058491E-01	0.0	0.0	0.0	2.685010E-02
8	G	-1.597171E-02	-3.612197E-01	0.0	0.0	0.0	9.459566E-02
9	G	-1.737466E-02	1.032528E-01	0.0	0.0	0.0	7.852515E-02
10	G	-1.855829E-02	3.578079E-01	0.0	0.0	0.0	2.195141E-02
11	G	-1.951105E-02	3.356813E-01	0.0	0.0	0.0	-2.672526E-02
12	G	-2.033132E-02	1.368604E-01	0.0	0.0	0.0	-4.722035E-02
13	G	-2.103402E-02	-8.409937E-02	0.0	0.0	0.0	-3.571981E-02
14	G	-2.162607E-02	-1.796712E-01	0.0	0.0	0.0	8.090157E-04
15	G	-2.210993E-02	-8.824361E-02	0.0	0.0	0.0	2.996750E-02
16	G	-2.248384E-02	5.593792E-02	0.0	0.0	0.0	1.958947E-02
17	G	-2.276960E-02	6.938873E-02	0.0	0.0	0.0	-1.545927E-02
18	G	-2.297593E-02	-6.121998E-02	0.0	0.0	0.0	-2.788143E-02
19	G	-2.310740E-02	-1.371480E-01	0.0	0.0	0.0	3.962083E-03
20	G	-2.316517E-02	-9.585696E-03	0.0	0.0	0.0	4.316311E-02
21	G	-2.318054E-02	2.533007E-01	0.0	0.0	0.0	5.714239E-02

* * * END OF JOB * * *

```
NASTRAN FILES=(NPTP,OPTP,PLT2)
```

CDC CYBER SERIES
MODEL 173

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 3,0
$
$    THE FOLLOWING CARDS (THE CHECKPOINT DICTIONARY) WERE PUNCHED BY
$          THE PREVIOUS RUN (DEMO. PROB. 3) WHICH WAS CHECKPOINTED.
$    THIS JOB IS A RESTART FROM DEMO. PROB. 3
$
$INSERT
RESTART  NASTRAN ,DEMO     , 2/ 9/81,    60020,
          1,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     5
          2,   REENTER AT DMAP SEQUENCE NUMBER     6
          3,   GPL      ,   FLAGS = 0,   REEL =  1,   FILE =     6
          4,   EQEXIN   ,   FLAGS = 0,   REEL =  1,   FILE =     7
          5,   GPDT     ,   FLAGS = 0,   REEL =  1,   FILE =     8
          6,   BGPDT    ,   FLAGS = 0,   REEL =  1,   FILE =     9
          7,   SIL      ,   FLAGS = 0,   REEL =  1,   FILE =    10
          8,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    11
          9,   CSTM     ,   FLAGS = 0,   REEL =  0,   FILE =     0
         10,   REENTER AT DMAP SEQUENCE NUMBER     8
         11,   ECT      ,   FLAGS = 0,   REEL =  1,   FILE =    12
         12,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    13
         13,   REENTER AT DMAP SEQUENCE NUMBER    22
         14,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    14
         15,   PLTPAR   ,   FLAGS = 0,   REEL =  0,   FILE =     0
         16,   GPSETS   ,   FLAGS = 0,   REEL =  0,   FILE =     0
         17,   ELSETS   ,   FLAGS = 0,   REEL =  0,   FILE =     0
         18,   REENTER AT DMAP SEQUENCE NUMBER    24
         19,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    15
         20,   GPTT     ,   FLAGS = 0,   REEL =  0,   FILE =     0
         21,   REENTER AT DMAP SEQUENCE NUMBER    29
         22,   EST      ,   FLAGS = 0,   REEL =  1,   FILE =    16
         23,   GPECT    ,   FLAGS = 0,   REEL =  1,   FILE =    17
         24,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    18
         25,   GEI      ,   FLAGS = 0,   REEL =  0,   FILE =     0
         26,   OGPST    ,   FLAGS = 0,   REEL =  0,   FILE =     0
         27,   REENTER AT DMAP SEQUENCE NUMBER    34
         28,   KELM     ,   FLAGS = 0,   REEL =  1,   FILE =    19
         29,   KDICT    ,   FLAGS = 0,   REEL =  1,   FILE =    20
         30,   MELM     ,   FLAGS = 0,   REEL =  1,   FILE =    21
         31,   MDICT    ,   FLAGS = 0,   REEL =  1,   FILE =    22
         32,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    23
         33,   REENTER AT DMAP SEQUENCE NUMBER    37
         34,   KGGX     ,   FLAGS = 0,   REEL =  1,   FILE =    24
         35,   GPST     ,   FLAGS = 0,   REEL =  1,   FILE =    25
         36,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    26
         37,   REENTER AT DMAP SEQUENCE NUMBER    41
         38,   MGG      ,   FLAGS = 0,   REEL =  1,   FILE =    27
         39,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =    28
```

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
40.  REENTER AT DMAP SEQUENCE NUMBER    47
41.  KGGX    ,  FLAGS = 4,  REEL =  1,  FILE =   24
42.  KGG     ,  FLAGS = 4,  REEL =  1,  FILE =   24
43.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   29
44.  REENTER AT DMAP SEQUENCE NUMBER    57
45.  USET    ,  FLAGS = 0,  REEL =  1,  FILE =   30
46.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   31
47.  KRR     ,  FLAGS = 0,  REEL =  0,  FILE =    0
48.  KLR     ,  FLAGS = 0,  REEL =  0,  FILE =    0
49.  DM      ,  FLAGS = 0,  REEL =  0,  FILE =    0
50.  MLR     ,  FLAGS = 0,  REEL =  0,  FILE =    0
51.  MR      ,  FLAGS = 0,  REEL =  0,  FILE =    0
52.  GM      ,  FLAGS = 0,  REEL =  0,  FILE =    0
53.  RG      ,  FLAGS = 0,  REEL =  0,  FILE =    0
54.  GO      ,  FLAGS = 0,  REEL =  0,  FILE =    0
55.  KFS     ,  FLAGS = 0,  REEL =  0,  FILE =    0
56.  QG      ,  FLAGS = 0,  REEL =  0,  FILE =    0
57.  ASET    ,  FLAGS = 0,  REEL =  0,  FILE =    0
58.  REENTER AT DMAP SEQUENCE NUMBER    65
59.  KNN     ,  FLAGS = 4,  REEL =  1,  FILE =   24
60.  MGG     ,  FLAGS = 4,  REEL =  1,  FILE =   27
61.  MNN     ,  FLAGS = 4,  REEL =  1,  FILE =   27
62.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   32
63.  REENTER AT DMAP SEQUENCE NUMBER    73
64.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   33
65.  KFF     ,  FLAGS = 0,  REEL =  0,  FILE =    0
66.  MFF     ,  FLAGS = 0,  REEL =  0,  FILE =    0
67.  REENTER AT DMAP SEQUENCE NUMBER    76
68.  KFS     ,  FLAGS = 0,  REEL =  1,  FILE =   34
69.  KFF     ,  FLAGS = 0,  REEL =  1,  FILE =   35
70.  MFF     ,  FLAGS = 0,  REEL =  1,  FILE =   36
71.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   37
72.  REENTER AT DMAP SEQUENCE NUMBER    90
73.  KFF     ,  FLAGS = 4,  REEL =  1,  FILE =   35
74.  KAA     ,  FLAGS = 4,  REEL =  1,  FILE =   35
75.  MFF     ,  FLAGS = 4,  REEL =  1,  FILE =   36
76.  MAA     ,  FLAGS = 4,  REEL =  1,  FILE =   36
77.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   38
78.  REENTER AT DMAP SEQUENCE NUMBER   100
79.  EED     ,  FLAGS = 0,  REEL =  1,  FILE =   39
80.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   40
81.  REENTER AT DMAP SEQUENCE NUMBER   104
82.  LAMA    ,  FLAGS = 0,  REEL =  1,  FILE =   41
83.  PHIA    ,  FLAGS = 0,  REEL =  1,  FILE =   42
84.  MI      ,  FLAGS = 0,  REEL =  1,  FILE =   43
85.  OEIGS   ,  FLAGS = 0,  REEL =  1,  FILE =   44
86.  XVPS    ,  FLAGS = 0,  REEL =  1,  FILE =   45
87.  REENTER AT DMAP SEQUENCE NUMBER   112
88.  PHIG    ,  FLAGS = 0,  REEL =  1,  FILE =   46
89.  QG      ,  FLAGS = 0,  REEL =  1,  FILE =   47
```

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

```
        90,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     48
        91,   REENTER AT DMAP SEQUENCE NUMBER   121
        92,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     49
        93,   SIP      ,   FLAGS = 0,   REEL =  0,   FILE =      0
        94,   BGPDP    ,   FLAGS = 0,   REEL =  0,   FILE =      0
        95,   REENTER AT DMAP SEQUENCE NUMBER   125
        96,   BGPDP    ,   FLAGS = 0,   REEL =  1,   FILE =     50
        97,   SIP      ,   FLAGS = 0,   REEL =  1,   FILE =     51
        98,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     52
$ END OF CHECKPOINT DICTIONARY
$SEQUENCE  NO
TIME 10
CEND
```

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

```
                         C A S E   C O N T R O L   D E C K   E C H O
     CARD
     COUNT
       1      TITLE=NASTRAN COURSE - - - DEMO. PROB. 3C
       2      SUBTITLE=NORMAL MODES ANALYSIS - - -  INVERSE POWER METHOD
       3      LABEL=RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
       4      ECHO    =   BOTH
       5       SPC= 11
       6      METHOD=41
       7        DISP=  ALL
       8      BEGIN BULK
```

```
RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

                         I N P U T   B U L K   D A T A   D E C K   E C H O

                  .   1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
                  $       THE SLASH CARD (/) IS USED TO DELETE CARDS FROM THE RESTART.
                  /       22
                  EIGR          41      INV      0.      300.     30      6       0     1.-3+EIGR41
                  ENDDATA

               TOTAL COUNT=    4
```

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
    1-        BAROR           31                      0.0     1.      0.0     1
    2-        CBAR    1               1       2
    3-        CBAR    2               2       3
    4-        CBAR    3               3       4
    5-        CBAR    4               4       5
    6-        CBAR    5               5       6
    7-        CBAR    6               6       7
    8-        CBAR    7               7       8
    9-        CBAR    8               8       9
   10-        CBAR    9               9       10
   11-        CBAR    10              10      11
   12-        CBAR    11              11      12
   13-        CBAR    12              12      13
   14-        CBAR    13              13      14
   15-        CBAR    14              14      15
   16-        CBAR    15              15      16
   17-        CBAR    16              16      17
   18-        CBAR    17              17      18
   19-        CBAR    18              18      19
   20-        CBAR    19              19      20
   21-        CBAR    20              20      21
   22-        EIGR    41      INV     0.0     300.    30      6       0       1.-3    +EIGR41
   23-        +EIGR41     MAX
   24-        GRDSET                                                  345
   25-        GRID    1               0.0
   26-        GRID    2               5.
   27-        GRID    3               10.
   28-        GRID    4               15.
   29-        GRID    5               20.
   30-        GRID    6               25.
   31-        GRID    7               30.
   32-        GRID    8               35.
   33-        GRID    9               40.
   34-        GRID    10              45.
   35-        GRID    11              50.
   36-        GRID    12              55.
   37-        GRID    13              60.
   38-        GRID    14              65.
   39-        GRID    15              70.
   40-        GRID    16              75.
   41-        GRID    17              80.
   42-        GRID    18              85.
   43-        GRID    19              90.
   44-        GRID    20              95.
   45-        GRID    21              100.
   46-        MAT1    32      30.+6           .3      7.324-4                         +STEEL
   47-        PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
   48-        +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
   49-        +P31A   0.75    0.75    0.
   50-        SPC1    11      126     1
```

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

LIST OF MODIFIED CARDS

```
MASK WORD - BIT POSITION - CARD NAME - PACKED BIT POSITION
    1
    2
    3
                  23          EIGR                61
    4
    5
    6
    7
    8
    9
   10
   11
   12
   13
                  17          POUTS               19
                  31          NOLOOP$
```

PART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

S O R T E D B U L K D A T A E C H O

```
CARD
COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
             ENDDATA
```

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

*INDICATES INSTRUCTIONS TO BE EXECUTED FOR MODIFIED RESTART

```
THE FOLLOWING FILES WERE USED FROM OLD PROBLEM TAPE TO INITIATE RESTART

   FILE NAME  REEL NO.  FILE NO.

    CSTM       (PURGED)
    PLTPAR     (PURGED)
    GPSETS     (PURGED)
    ELSETS     (PURGED)
    EM         (PURGED)
    VR         (PURGED)
    GM         (PURGED)
    GO         (PURGED)
    GPL               1        6
    EQEXIN            1        7
    BGPDT             1        9
    SIL               1       10
    EST               1       16
    GPECT             1       17
    KGGX              1       24
    KGG               1       24
    KNN               1       24
    USET              1       30
    KFS               1       34
    KFF               1       35
    KAA               1       35
    MFF               1       36
    MAA               1       36
    LAMA              1       41
    PHIA              1       42
    XVPS              1       52

          **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**
```

```
RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK BGPDP     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK SIP       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** USER INFORMATION MESSAGE 3143, THE EIGENVALUES AND EIGENVECTORS FOUND ON THIS RESTART WILL BE APPENDED

TO THE          4 EIGENVALUES AND EIGENVECTORS PREVIOUSLY CHECKPOINTED.

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =   60 )
                TIME ESTIMATE=      1           C AVG =      4          PC AVG =      0   SPILL GROUPS =     0            S AVG =      1
              ADDITIONAL CORE= -23722           C MAX =      5           PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =      1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA      ( N =   60 )
                TIME ESTIMATE=      1           C AVG =      4          PC AVG =      0   SPILL GROUPS =     0            S AVG =      1
              ADDITIONAL CORE= -23722           C MAX =      5           PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =      1
                                                METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .1
                                                METHOD 3 T ,NBR PASSES =   1,EST. TIME =       .0
```

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

NUMBER OF EIGENVALUES EXTRACTED	6
NUMBER OF STARTING POINTS USED	1
NUMBER OF STARTING POINT MOVES	0
NUMBER OF TRIANGULAR DECOMPOSITIONS	2
TOTAL NUMBER OF VECTOR ITERATIONS	15
REASON FOR TERMINATION	6
LARGEST OFF-DIAGONAL MODAL MASS TERM	.49E-14
MODE PAIR	6
. . .	5
NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION	0

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	5	1.233355E+02	1.110565E+01	1.767519E+00	5.628564E-03	6.942017E-01
2	1	4.815432E+03	6.939331E+01	1.104429E+01	5.695112E-03	2.742442E+01
3	2	3.754747E+04	1.937717E+02	3.083972E+01	5.808644E-03	2.180999E+02
4	3	1.433458E+05	3.786103E+02	6.025770E+01	5.987773E-03	8.583220E+02
5	4	3.893342E+05	6.239665E+02	9.930736E+01	6.249210E-03	2.433031E+03
6	6	8.632084E+05	9.290901E+02	1.478693E+02	6.618472E-03	5.713120E+03

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

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NORMAL MODES ANALYSIS - - - INVERSE POWER METHOD

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 1.233355E+02

R E A L   E I G E N V E C T O R   N O .   1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-1.380769E-21	4.292372E-03	0.0	0.0	0.0	1.696038E-03
3	G	-2.753024E-21	1.076354E-02	0.0	0.0	0.0	3.271528E-03
4	G	-4.108308E-21	3.641100E-02	0.0	0.0	0.0	4.726585E-03
5	G	-5.438258E-21	6.543324E-02	0.0	0.0	0.0	6.061540E-03
6	G	-6.734880E-21	9.723142E-02	0.0	0.0	0.0	7.277074E-03
7	G	-7.985580E-21	1.344110E-01	0.0	0.0	0.0	8.374361E-03
8	G	-9.195220E-21	1.807844E-01	0.0	0.0	0.0	9.355188E-03
9	G	-1.034417E-20	2.297767E-01	0.0	0.0	0.0	1.022204E-02
10	G	-1.142934E-20	2.828245E-01	0.0	0.0	0.0	1.097816E-02
11	G	-1.244404E-20	3.343840E-01	0.0	0.0	0.0	1.162756E-02
12	G	-1.338202E-20	3.993336E-01	0.0	0.0	0.0	1.217507E-02
13	G	-1.423750E-20	4.609776E-01	0.0	0.0	0.0	1.262635E-02
14	G	-1.500520E-20	5.250508E-01	0.0	0.0	0.0	1.298798E-02
15	G	-1.568038E-20	5.907233E-01	0.0	0.0	0.0	1.326747E-02
16	G	-1.625890E-20	6.576053E-01	0.0	0.0	0.0	1.347337E-02
17	G	-1.673716E-20	7.253526E-01	0.0	0.0	0.0	1.361532E-02
18	G	-1.711225E-20	7.936716E-01	0.0	0.0	0.0	1.370403E-02
19	G	-1.738182E-20	8.623251E-01	0.0	0.0	0.0	1.375128E-02
20	G	-1.754424E-20	9.311376E-01	0.0	0.0	0.0	1.376990E-02
21	G	-1.759849E-20	1.000000E+00	0.0	0.0	0.0	1.377372E-02

NASTRAN COURSE - - - DEMO. PROB. 3C FEBRUARY 9, 1981 NASTRAN 12/15/80 PAGE 14
NORMAL MODES ANALYSIS - - - INVERSE POWER METHOD

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 4.815432E+03

R E A L   E I G E N V E C T O R   N O .   2

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.812109E-21	-2.5[illegible]131E-02	0.0	0.0	0.0	-9.708344E-03
3	G	3.613045E-21	-9.2[illegible]0123E-02	0.0	0.0	0.0	-1.679409E-02
4	G	5.391705E-21	-1.[illegible]412[illegible]0E-01	0.0	0.0	0.0	-2.129275E-02
5	G	7.137123E-21	-3.[illegible]642[illegible]E-01	0.0	0.0	0.0	-2.328907E-02
6	G	8.838535E-21	-4.[illegible]17[illegible]E-01	0.0	0.0	0.0	-2.293063E-02
7	G	1.048545E-20	-5.274578E-01	0.0	0.0	0.0	-2.043395E-02
8	G	1.206773E-20	-6.1[illegible]67E-01	0.0	0.0	0.0	-1.608363E-02
9	G	1.357559E-20	-6.5[illegible]312E-01	0.0	0.0	0.0	-1.022490E-02
10	G	1.49[illegible]976E-20	-7.1[illegible]144E-01	0.0	0.0	0.0	-3.250695E-03
11	G	1.633145E-20	-7.1[illegible]E-01	0.0	0.0	0.0	4.4158[illegible]7E-03
12	G	1.750245E-20	-6.75[illegible]21E-01	0.0	0.0	0.0	1.234208E-02
13	G	1.866517E-20	-5.[illegible]0472E-01	0.0	0.0	0.0	2.010901E-02
14	G	1.969269E-20	-4.75125[illegible]E-01	0.0	0.0	0.0	2.733465E-02
15	G	2.057880E-20	-3.221097E-01	0.0	0.0	0.0	3.3[illegible]9732E-02
16	G	2.133803E-20	-1.399533E-01	0.0	0.0	0.0	3.6[illegible]5713E-02
17	G	2.196571E-20	6.543377E-02	0.0	0.0	0.0	4.297501E-02
18	G	2.245796E-20	2.377321E-01	0.0	0.0	0.0	4.572844E-02
19	G	2.281175E-20	5.208269E-01	0.0	0.0	0.0	4.732361E-02
20	G	2.302491E-20	7.594742E-01	0.0	0.0	0.0	4.800379E-02
21	G	2.309610E-20	1.000000E+00	0.0	0.0	0.0	4.815432E-02

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 3.754747E+04

R E A L E I G E N V E C T O R N O . 3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-2.841736E-21	[illegible]	0.0	0.0	0.0	2.497113E-02
3	G	-5.665951E-21	[illegible]	0.0	0.0	0.0	3.745774E-02
4	G	-8.455233E-21	[illegible]	0.0	0.0	0.0	3.965870E-02
5	G	-1.119238E-20	[illegible]	0.0	0.0	0.0	3.162030E-02
6	G	[illegible]	[illegible]	0.0	0.0	0.0	1.628218E-02
7	G	-1.643322E-20	[illegible]	0.0	0.0	0.0	-3.201846E-03
8	G	[illegible]	[illegible]	0.0	0.0	0.0	-2.331184E-02
9	G	-2.125415E-20	[illegible]	0.0	0.0	0.0	-4.060504E-02
10	G	-2.352282E-20	[illegible]	0.0	0.0	0.0	-5.217508E-02
11	G	-2.561087E-20	[illegible]	0.0	0.0	0.0	-5.604650E-02
12	G	-2.754131E-20	-2.422396E-01	0.0	0.0	0.0	-5.143665E-02
13	G	-2.930196E-20	-4.721841E-01	0.0	0.0	0.0	-3.625452E-02
14	G	-3.098144E-20	-6.215020E-01	0.0	0.0	0.0	-1.997258E-02
15	G	-3.227153E-20	[illegible]	0.0	0.0	0.0	2.640227E-03
16	G	-3.346215E-20	[illegible]	0.0	0.0	0.0	2.546280E-02
17	G	-3.444647E-20	[illegible]	0.0	0.0	0.0	4.703662E-02
18	G	-3.521842E-20	[illegible]	0.0	0.0	0.0	6.351274E-02
19	G	-3.577323E-20	2.156822E-01	0.0	0.0	0.0	7.411529E-02
20	G	-3.610749E-20	6.008235E-01	0.0	0.0	0.0	7.904515E-02
21	G	-3.621914E-20	1.000000E+00	0.0	0.0	0.0	8.021846E-02

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 1.433458E+05

R E A L   E I G E N V E C T O R   N O .   4

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.357540E-20	-1.2[illegible]2547E-01	0.0	0.0	0.0	-4.466526E-02
3	G	2.706710E-20	-3.935511E-01	0.0	0.0	0.0	-5.680902E-02
4	G	4.039192E-20	-6.4[illegible]E-01	0.0	0.0	0.0	-4.108798E-02
5	G	5.346770E-20	-7.[illegible]E-01	0.0	0.0	0.0	-6.840634E-03
6	G	6.621352E-20	-7.0[illegible]E-01	0.0	0.0	0.0	3.316449E-02
7	G	7.855171E-20	-4.5[illegible]E-01	0.0	0.0	0.0	6.571035E-02
8	G	9.040528E-20	-7.9[illegible]E-02	0.0	0.0	0.0	8.032290E-02
9	G	1.017015E-19	3.115790E-01	0.0	0.0	0.0	7.223278E-02
10	G	1.123706E-19	6.0[illegible]812E-01	0.0	0.0	0.0	4.351453E-02
11	G	1.223470E-19	7.2[illegible]5038E-01	0.0	0.0	0.0	2.412442E-03
12	G	1.315690E-19	6.32116[illegible]E-01	0.0	0.0	0.0	-3.911161E-02
13	G	1.39[illegible]98E-19	3.5[illegible]737E-01	0.0	0.0	0.0	-6.868540E-02
14	G	1.47[illegible]277E-19	-2.311654E-02	0.0	0.0	0.0	-7.806663E-02
15	G	1.541659E-19	-3.8[illegible]42[illegible]E-01	0.0	0.0	0.0	-6.369122E-02
16	G	1.598537E-19	-6.275672E-01	0.0	0.0	0.0	-2.943286E-02
17	G	1.645560E-19	-6.643603E-01	0.0	0.0	0.0	1.561108E-02
18	G	1.682437E-19	-4.727451E-01	0.0	0.0	0.0	5.986574E-02
19	G	1.708941E-19	-8.362660E-02	0.0	0.0	0.0	9.314320E-02
20	G	1.724909E-19	4.326236E-01	0.0	0.0	0.0	1.104585E-01
21	G	1.730243E-19	1.000000E+00	0.0	0.0	0.0	1.149382E-01

NORMAL MODES ANALYSIS - - - INVERSE POWER METHOD

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 3.893342E+05

R E A L E I G E N V E C T O R N O . 5

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.636531E-16	[illegible]	0.0	0.0	0.0	6.709018E-02
3	G	1.12[illegible]31E-15	[illegible]	0.0	0.0	0.0	6.640411E-02
4	G	[illegible]	[illegible]	0.0	0.0	0.0	1.0[illegible]2157E-02
5	G	2.21[illegible]9E-15	[illegible]	0.0	0.0	0.0	-5.017815E-02
6	G	2.74[illegible]210E-15	[illegible]	0.0	0.0	0.0	-9.738030E-02
7	G	3.261482E-15	[illegible]	0.0	0.0	0.0	-1.00[illegible]E-01
8	G	3.75[illegible]44E-15	[illegible]	0.0	0.0	0.0	-5.723[illegible]E-02
9	G	4.22[illegible]4E-15	[illegible]	0.0	0.0	0.0	1.272[illegible]2E-02
10	G	[illegible]	[illegible]	0.0	0.0	0.0	7.[illegible]E-02
11	G	[illegible]	[illegible]	0.0	0.0	0.0	1.0379[illegible]E-01
12	G	[illegible]	[illegible]	0.0	0.0	0.0	8.1[illegible]552E-02
13	G	5.8119[illegible]E-15	[illegible]	0.0	0.0	0.0	2.144224E-02
14	G	6.125376E-15	[illegible]	0.0	0.0	0.0	-4.902427E-02
15	G	6.400998E-15	[illegible]	0.0	0.0	0.0	-9.574[illegible]26E-02
16	G	6.637156E-15	[illegible]	0.0	0.0	0.0	-9.[illegible]02785E-02
17	G	6.822394E-15	[illegible]	0.0	0.0	0.0	-4.8[illegible]6156E-02
18	G	6.965508E-15	[illegible]	0.0	0.0	0.0	2.611048E-02
19	G	7.095555E-15	[illegible]	0.0	0.0	0.0	9.728805E-02
20	G	7.161855E-15	[illegible]	0.0	0.0	0.0	1.400819E-01
21	G	7.184001E-15	1.000000E+00	0.0	0.0	0.0	1.522487E-01

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
EIGENVALUE = 8.632064E+05

R E A L   E I G E N V E C T O R   N O .   6

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-5.072118E-17	[illegible]	0.0	0.0	0.0	-9.051773E-02
3	G	-1.130927E-16	[illegible]	0.0	0.0	0.0	[illegible]
4	G	[illegible]	[illegible]	0.0	0.0	0.0	3.532672E-02
5	G	[illegible]	[illegible]	0.0	0.0	0.0	1.174548E-01
6	G	[illegible]	[illegible]	0.0	0.0	0.0	1.227339E-01
7	G	[illegible]	[illegible]	0.0	0.0	0.0	[illegible]
8	G	[illegible]	[illegible]	0.0	0.0	0.0	[illegible]
9	G	[illegible]	[illegible]	0.0	0.0	0.0	-1.271645E-01
10	G	[illegible]	[illegible]	0.0	0.0	0.0	-1.031346E-01
11	G	-5.111455E-16	[illegible]	0.0	0.0	0.0	-7.671608E-03
12	G	-5.497276E-16	[illegible]	0.0	0.0	0.0	9.315331E-02
13	G	-5.848704E-16	[illegible]	0.0	0.0	0.0	1.296069E-01
14	G	-6.164073E-16	[illegible]	0.0	0.0	0.0	7.054625E-02
15	G	[illegible]	[illegible]	0.0	0.0	0.0	-2.913342E-02
16	G	[illegible]	[illegible]	0.0	0.0	0.0	-1.138756E-01
17	G	-6.875564E-16	[illegible]	0.0	0.0	0.0	-1.179974E-01
18	G	[illegible]	[illegible]	0.0	0.0	0.0	-3.615046E-02
19	G	-7.140390E-16	[illegible]	0.0	0.0	0.0	8.092702E-02
20	G	-7.207110E-16	[illegible]	0.0	0.0	0.0	1.660973E-01
21	G	-7.229396E-16	1.000000E+00	0.0	0.0	0.0	1.930724E-01

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

AD-A096 867 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT.(U)
FEB 81 G C EVERSTINE, M M HURWITZ
UNCLASSIFIED DTNSRDC/CMLD-81-04 NL

3 OF 5
AD
A096867

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
TIME 10
SOL 4,0
CEND
```

5/8-INCH DIAMETER STEEL BEAM

```
                          C A S E   C O N T R O L   D E C K   E C H O
CARD
COUNT
 1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 4
 2      SUBTITLE =STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS
 3      LABEL=  5/8-INCH DIAMETER STEEL BEAM
 4       SPC= 11
 5         LOAD = 29
 6         OLOAD=ALL
 7        DISP=ALL
 8      SET 18=  1 THRU 20
 9      $
10      SUBCASE 1
11           LABEL = LINEAR STATIC SOLUTION
12            ELFORCE = 18
13      SUBCASE 2
14          LABEL=STATIC DIFFERENTIAL STIFFNESS (BEAM-COLUMN) SOLUTION
15      $  DSCOEF=DEFAULT    (REQUIRED FOR LEVEL 16, BUT NOT FOR LEVEL 17)
16      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

5/8-INCH DIAMETEP STEEL BEAM

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	CELAS2	25	2.	13	2					
23-	FORCE1	22	21	1.	21	20				
24-	GRDSET							345		
25-	GRID	1		0.0						
26-	GRID	2		5.						
27-	GRID	3		10.						
28-	GRID	4		15.						
29-	GRID	5		20.						
30-	GRID	6		25.						
31-	GRID	7		30.						
32-	GRID	8		35.						
33-	GRID	9		40.						
34-	GRID	10		45.						
35-	GRID	11		50.						
36-	GRID	12		55.						
37-	GRID	13		60.						
38-	GRID	14		65.						
39-	GRID	15		70.						
40-	GRID	16		75.						
41-	GRID	17		80.						
42-	GRID	18		85.						
43-	GRID	19		90.						
44-	GRID	20		95.						
45-	GRID	21		100.						
46-	LOAD	29	25.0	1.0	22					
47-	MAT1	32	30.+6		.3	7.324-4				+STEEL
48-	MOMENT	22	21		1.	0.0	0.0	1.		
49-	PBAR	31	32	.30680	7.490-3	7.490-3	1.498-2			+P31
50-	+P31	0.3125	0.	-0.3125	0.	0.	0.3125	0.	0.	+P31A

5/8-INCH DIAMETER STEEL BEAM

```
                              S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT       .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
   51-       +P31A  0.75    0.75    0.
   52-       SPC1   11      126     1
             ENDDATA
```

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE   34 STARTING WITH ID   1

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE   12 STARTING WITH ID   25

```
STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

  5/8-INCH DIAMETER STEEL BEAM



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA      ( N =    60 )
                 TIME ESTIMATE=       1          C AVG =      4         PC AVG =     0   SPILL GROUPS =     0            S AVG =     1
               ADDITIONAL CORE= -28488           C MAX =      5          PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =     1

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                             MPYAD--NULL MATRIX PRODUCT
                                             METHOD 1 NT,NBR PASSES =   1,EST. TIME =       .1

*** USER INFORMATION MESSAGE 3035

FOR LOAD    1 EPSILON SUB E = -3.0623393E-10

                                             MPYAD--NULL MATRIX PRODUCT
```

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

LINEAR STATIC SOLUTION SUBCASE 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-1.358105E-05	5.981815E-04	0.0	0.0	0.0	2.439828E-04
3	G	-2.716210E-05	2.484171E-03	0.0	0.0	0.0	5.151233E-04
4	G	-4.074316E-05	5.793758E-03	0.0	0.0	0.0	8.134216E-04
5	G	-5.432421E-05	1.066273E-02	0.0	0.0	0.0	1.138878E-03
6	G	-6.790526E-05	1.722688E-02	0.0	0.0	0.0	1.491492E-03
7	G	-8.148631E-05	2.562199E-02	0.0	0.0	0.0	1.871263E-03
8	G	-9.506736E-05	3.598386E-02	0.0	0.0	0.0	2.278193E-03
9	G	-1.086484E-04	4.844826E-02	0.0	0.0	0.0	2.712280E-03
10	G	-1.222295E-04	6.315100E-02	0.0	0.0	0.0	3.173525E-03
11	G	-1.358105E-04	8.022786E-02	0.0	0.0	0.0	3.661928E-03
12	G	-1.493916E-04	9.981462E-02	0.0	0.0	0.0	4.177489E-03
13	G	-1.629726E-04	1.220471E-01	0.0	0.0	0.0	4.720207E-03
14	G	-1.765537E-04	1.470389E-01	0.0	0.0	0.0	5.276504E-03
15	G	-1.901347E-04	1.748121E-01	0.0	0.0	0.0	5.832801E-03
16	G	-2.037158E-04	2.053669E-01	0.0	0.0	0.0	6.389099E-03
17	G	-2.172968E-04	2.387031E-01	0.0	0.0	0.0	6.945396E-03
18	G	-2.308779E-04	2.748208E-01	0.0	0.0	0.0	7.501693E-03
19	G	-2.444589E-04	3.137200E-01	0.0	0.0	0.0	8.057991E-03
20	G	-2.580400E-04	3.554007E-01	0.0	0.0	0.0	8.614288E-03
21	G	-2.716210E-04	3.998629E-01	0.0	0.0	0.0	9.170585E-03

LINEAR STATIC SOLUTION SUBCASE 1

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
21	G	-2.500000E+01	0.0	0.0	0.0	0.0	2.500000E+01

LINEAR STATIC SOLUTION SUBCASE 1

F O R C E S I N B A R E L E M E N T S (C B A R)

ELEMENT	BEND-MOMENT END-A		BEND-MOMENT END-B		- SHEAR -		AXIAL	
ID.	PLANE 1	PLANE 2	PLANE 1	PLANE 2	PLANE 1	PLANE 2	FORCE	TORQUE
1	1.035435E+01	0.0	1.157482E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
2	1.157482E+01	0.0	1.279529E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
3	1.279529E+01	0.0	1.401576E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
4	1.401576E+01	0.0	1.523623E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
5	1.523623E+01	0.0	1.645670E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
6	1.645670E+01	0.0	1.767717E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
7	1.767717E+01	0.0	1.889765E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
8	1.889765E+01	0.0	2.011812E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
9	2.011812E+01	0.0	2.133859E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
10	2.133859E+01	0.0	2.255906E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
11	2.255906E+01	0.0	2.377953E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
12	2.377953E+01	0.0	2.500000E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
13	2.500000E+01	0.0	2.500000E+01	0.0	-2.473826E-10	0.0	-2.500000E+01	0.0
14	2.500000E+01	0.0	2.500000E+01	0.0	-2.037268E-10	0.0	-2.500000E+01	0.0
15	2.500000E+01	0.0	2.500000E+01	0.0	-1.891749E-10	0.0	-2.500000E+01	0.0
16	2.500000E+01	0.0	2.500000E+01	0.0	-1.164153E-10	0.0	-2.500000E+01	0.0
17	2.500000E+01	0.0	2.500000E+01	0.0	-1.164153E-10	0.0	-2.500000E+01	0.0
18	2.500000E+01	0.0	2.500000E+01	0.0	-8.731149E-11	0.0	-2.500000E+01	0.0
19	2.500000E+01	0.0	2.500000E+01	0.0	-5.820766E-11	0.0	-2.500000E+01	0.0
20	2.500000E+01	0.0	2.500000E+01	0.0	-8.731149E-11	0.0	-2.500000E+01	0.0

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KBLL      ( N =    60 )
            TIME ESTIMATE=      1          C AVG =     4          PC AVG =     0  SPILL GROUPS =    0          S AVG =     1
          ADDITIONAL CORE= -28488          C MAX =     5           PCMAX =     0     PC GROUPS =    0  PREFACE LOOPS =     1
```

5/8-INCH DIAMETER STEEL BEAM

C O N T E N T S   O F   P A R A M E T E R   T A B L E

DET 4.922688E+03

5/8-INCH DIAMETER STEEL BEAM

C O N T E N T S   O F   P A R A M E T E R   T A B L E

```
POWER                    0

           MPYAD--NULL MATRIX PRODUCT
           METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .1
```

```
  5/8-INCH DIAMETER STEEL BEAM



*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -6.9758341E-10

                                        VPYAD--NULL MATRIX PRODUCT
                                        METHOD 1 T ,NBR PASSES =    1,EST. TIME =       .1



                                        METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .2
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
*** USER INFORMATION MESSAGE 7019,

MODULE DSCHK IS EXITING FOR REASON    1 ON ITERATION NUMBER      1.

PARAMETER VALUES ARE AS FOLLOWS
        DONE   =          -1
        SHIFT  =           1
        DSEPSI  = 6.0721379E-14.


*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED
```

STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

STATIC DIFFERENTIAL STIFFNESS (BEAM-COLUMN) SOLUTION SUBCASE 2

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-1.358105E-05	9.747649E-04	0.0	0.0	0.0	3.971793E-04
3	G	-2.716210E-05	4.039337E-03	0.0	0.0	0.0	8.357214E-04
4	G	-4.074316E-05	9.397532E-03	0.0	0.0	0.0	1.314407E-03
5	G	-5.432421E-05	1.724678E-02	0.0	0.0	0.0	1.831904E-03
6	G	-6.790526E-05	2.777760E-02	0.0	0.0	0.0	2.386775E-03
7	G	-8.148631E-05	4.117304E-02	0.0	0.0	0.0	2.977475E-03
8	G	-9.506736E-05	5.760816E-02	0.0	0.0	0.0	3.602363E-03
9	G	-1.086484E-04	7.724966E-02	0.0	0.0	0.0	4.259700E-03
10	G	-1.222295E-04	1.002552E-01	0.0	0.0	0.0	4.947659E-03
11	G	-1.358105E-04	1.267731E-01	0.0	0.0	0.0	5.664327E-03
12	G	-1.493916E-04	1.569421E-01	0.0	0.0	0.0	6.407710E-03
13	G	-1.629726E-04	1.908905E-01	0.0	0.0	0.0	7.175742E-03
14	G	-1.765537E-04	2.287016E-01	0.0	0.0	0.0	7.945052E-03
15	G	-1.901347E-04	2.703049E-01	0.0	0.0	0.0	8.692268E-03
16	G	-2.037158E-04	3.155845E-01	0.0	0.0	0.0	9.415312E-03
17	G	-2.172968E-04	3.644153E-01	0.0	0.0	0.0	1.011217E-02
18	G	-2.308779E-04	4.166606E-01	0.0	0.0	0.0	1.078091E-02
19	G	-2.444589E-04	4.721755E-01	0.0	0.0	0.0	1.141967E-02
20	G	-2.580400E-04	5.308055E-01	0.0	0.0	0.0	1.202668E-02
21	G	-2.716210E-04	5.923876E-01	0.0	0.0	0.0	1.260024E-02

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 5,0
TIME 10
CEND
```

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 5
  2      SUBTITLE=BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING
  3       SPC= 11
  4      DISP=ALL
  5      CLOAD=ALL
  6      SUBCASE 1
  7           LABEL = LINEAR STATIC SOLUTION
  8           LOAD=22
  9      SUBCASE 2
 10      LABEL=EIGENVALUES (BUCKLING LOAD FACTOR)
 11      METHOD=41
 12      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 .	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					+B5
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	CELAS2	25	2.	13	2					
23-	EIGB	41	INV	0.0	50.	1	1		1.-6	+E41
24-	+E41	MAX								
25-	FORCE1	22	21	1.	21	20				
26-	GRDSET							345		
27-	GRID	1		0.0						
28-	GRID	2		5.						
29-	GRID	3		10.						
30-	GRID	4		15.						
31-	GRID	5		20.						
32-	GRID	6		25.						
33-	GRID	7		30.						
34-	GRID	8		35.						
35-	GRID	9		40.						
36-	GRID	10		45.						
37-	GRID	11		50.						
38-	GRID	12		55.						
39-	GRID	13		60.						
40-	GRID	14		65.						
41-	GRID	15		70.						
42-	GRID	16		75.						
43-	GRID	17		80.						
44-	GRID	18		85.						
45-	GRID	19		90.						
46-	GRID	20		95.						
47-	GRID	21		100.						
48-	MAT1	32	30.+6		.3	7.324-4				+STEEL
49-	MOMENT	22	21		1.	0.0	0.0	1.		
50-	PBAR	31	32	.30680	7.490-3	7.490-3	1.498-2			+P31

```
                              S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   51-        +P31    0.3125  0.              -0.3125 0.      0.      0.3125  0.      0.      +P31A
   52-        +P31A   0.75    0.75    0.
   53-        SPC1    11      126     1
              ENDDATA

      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     34 STARTING WITH ID      1

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     12 STARTING WITH ID     25
```

```
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA      ( N =    60 )
              TIME ESTIMATE=      1          C AVG =     4        PC AVG =     0  SPILL GROUPS =     0          S AVG =      1
           ADDITIONAL CORE= -28488           C MAX =     5         PCMAX =     0     PC GROUPS =     0  PREFACE LOOPS =      1

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                       MPYAD--NULL MATRIX PRODUCT
                                       METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .1

*** USER INFORMATION MESSAGE 3035

FOR LOAD    1 EPSILON SUB E = -2.5209752E-10

                                       MPYAD--NULL MATRIX PRODUCT
```

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

LINEAR STATIC SOLUTION SUBCASE 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	-5.432421E-07	2.392726E-05	0.0	0.0	0.0	9.759310E-06
3	G	-1.086484E-06	9.936685E-05	0.0	0.0	0.0	2.060493E-05
4	G	-1.629726E-06	2.317503E-04	0.0	0.0	0.0	3.253687E-05
5	G	-2.172968E-06	4.265092E-04	0.0	0.0	0.0	4.555511E-05
6	G	-2.716210E-06	6.890752E-04	0.0	0.0	0.0	5.965967E-05
7	G	-3.259452E-06	1.024880E-03	0.0	0.0	0.0	7.485053E-05
8	G	-3.802694E-06	1.439354E-03	0.0	0.0	0.0	9.112771E-05
9	G	-4.345937E-06	1.937931E-03	0.0	0.0	0.0	1.084912E-04
10	G	-4.889179E-06	2.526040E-03	0.0	0.0	0.0	1.269410E-04
11	G	-5.432421E-06	3.209114E-03	0.0	0.0	0.0	1.464771E-04
12	G	-5.975663E-06	3.992585E-03	0.0	0.0	0.0	1.670995E-04
13	G	-6.518905E-06	4.861883E-03	0.0	0.0	0.0	1.888083E-04
14	G	-7.062147E-06	5.881555E-03	0.0	0.0	0.0	2.110602E-04
15	G	-7.605389E-06	6.992465E-03	0.0	0.0	0.0	2.333121E-04
16	G	-8.148631E-06	8.214675E-03	0.0	0.0	0.0	2.555640E-04
17	G	-8.691873E-06	9.543125E-03	0.0	0.0	0.0	2.778158E-04
18	G	-9.235115E-06	1.099283E-02	0.0	0.0	0.0	3.000677E-04
19	G	-9.778357E-06	1.254880E-02	0.0	0.0	0.0	3.223196E-04
20	G	-1.032160E-05	1.421603E-02	0.0	0.0	0.0	3.445715E-04
21	G	-1.086484E-05	1.599452E-02	0.0	0.0	0.0	3.668234E-04

LINEAR STATIC SOLUTION SUBCASE 1

L O A D   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
21	G	-1.000000E+00	0.0	0.0	0.0	0.0	1.000000E+00

```
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.


*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =   60 )
                TIME ESTIMATE=      1         C AVG =     4         PC AVG =     0   SPILL GROUPS =     0           S AVG =     1
             ADDITIONAL CORE= -23722          C MAX =     5          PCMAX =     0     PC GROUPS =     0  PREFACE LOOPS =     1
```

```
E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

     NUMBER OF EIGENVALUES EXTRACTED . . . . . .          1

     NUMBER OF STARTING POINTS USED . . . . . . .         1

     NUMBER OF STARTING POINT MOVES . . . . . . .         0

     NUMBER OF TRIANGULAR DECOMPOSITIONS  . . . .         1

     TOTAL NUMBER OF VECTOR ITERATIONS  . . . . .         8

     REASON FOR TERMINATION . . . . . . . . . . .         7

     LARGEST OFF-DIAGONAL MODAL MASS TERM . . . .   0.

                                               . . .      0
               MODE PAIR . . . . . . . . . . .
                                               . . .      0

     NUMBER OF OFF-DIAGONAL MODAL MASS
          TERMS FAILING CRITERION . . . . . . . .         0
```

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	1	7.898135E+01	8.887145E+00	1.414433E+00	0.0	0.0

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

EIGENVALUES (BUCKLING LOAD FACTOR)   SUBCASE 2
EIGENVALUE = 7.898135E+01

R E A L   E I G E N V E C T O R   N O .   1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	2.029899E-03	0.0	0.0	0.0	8.253827E-04
3	G	0.0	8.374113E-03	0.0	0.0	0.0	1.724410E-03
4	G	0.0	1.938140E-02	0.0	0.0	0.0	2.689189E-03
5	G	0.0	3.535956E-02	0.0	0.0	0.0	3.711245E-03
6	G	0.0	5.657274E-02	0.0	0.0	0.0	4.781605E-03
7	G	0.0	8.323915E-02	0.0	0.0	0.0	5.890870E-03
8	G	0.0	1.155291E-01	0.0	0.0	0.0	7.029298E-03
9	G	0.0	1.535634E-01	0.0	0.0	0.0	8.186893E-03
10	G	0.0	1.974127E-01	0.0	0.0	0.0	9.353490E-03
11	G	0.0	2.470[illegible]3E-01	0.0	0.0	0.0	1.051864E-02
12	G	0.0	3.025824E-01	0.0	0.0	0.0	1.167272E-02
13	G	0.0	3.637683E-01	0.0	0.0	0.0	1.280499E-02
14	G	0.0	4.305148E-01	0.0	0.0	0.0	1.386527E-02
15	G	0.0	5.022421E-01	0.0	0.0	0.0	1.480379E-02
16	G	0.0	5.783403E-01	0.0	0.0	0.0	1.561231E-02
17	G	0.0	6.581412E-01	0.0	0.0	0.0	1.628314E-02
18	G	0.0	7.409441E-01	0.0	0.0	0.0	1.681217E-02
19	G	0.0	8.260218E-01	0.0	0.0	0.0	1.719298E-02
20	G	0.0	9.126273E-01	0.0	0.0	0.0	1.742281E-02
21	G	0.0	1.000000E+00	0.0	0.0	0.0	1.749964E-02

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 6,0
TIME  10
CEND
```

FIVE ELEMENT FRAME--ROD ELEMENTS

```
                          C A S E   C O N T R O L   D E C K   E C H O
 CARD
 COUNT
   1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 6
   2      SUBTITLE =PIECEWISE LINEAR ANALYSIS
   3      LABEL =FIVE ELEMENT FRAME--ROD ELEMENTS
   4      DISP = ALL
   5      STRESS = ALL
   6      SPC = 1
   7      LOAD = 10
   8      PLCOEF = 11
   9      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

```
PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

                                   S O R T E D   B U L K   D A T A   E C H O
        CARD
        COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
           1-        CROD    1       1       1       2       2       1       1       3
           2-        CROD    3       1       2       4       4       1       3       4
           3-        CROD    5       2       2       3
           4-        CROD    6       3       4       5
           5-        FORCE1  10      5       1.+3    1       4
           6-        GRDSET                                                  3456
           7-        GRID    1               .0      0.0
           8-        GRID    2               -1.0    -1.0
           9-        GRID    3               1.0     -1.0
          10-        GRID    4               .0      -2.0
          11-        GRID    5               .0      -3.0
          12-        MAT1    7       1.+7            .3
          13-        MAT1    8       1.+7            .3
          14-        MAT1    9       1.+7            .3
          15-        MATS1   7       60
          16-        MATS1   8       60
          17-        PLFACT  11      20.     40.     50.     60.     70.     80.     100.
          18-        PROD    1       7       1.
          19-        PROD    2       8       1.
          20-        PROD    3       9       1.
          21-        SPC1    1       1       4       5
          22-        SPC1    1       12      1
          23-        TABLES1 60                                                              +PLA1
          24-        +PLA1   -55.-3  -1.+5   -5.-3   -5.+4   0.      0.      5.-3    5.+4    +PLA2
          25-        +PLA2   55.-3   1.+5    ENDT
                     ENDDATA


    **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE        1 STARTING WITH ID       1



***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =     6 )
          TIME ESTIMATE=       1         C AVG =      2         PC AVG =      0   SPILL GROUPS =     0            S AVG =       1
        ADDITIONAL CORE= -25461          C MAX =      4          PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1

                                   MPYAD--NULL MATRIX PRODUCT
                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0
```

```
FIVE ELEMENT FRAME--ROD ELEMENTS



*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -5.5382952E-14

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 3 T ,NBR PASSES =    1,EST. TIME =        .0
```

```
NASTRAN COURSE  - - -  DEMO. PROB. 6
PIECEWISE LINEAR ANALYSIS                                            DECEMBER  27, 1979   NASTRAN  8/15/79    PAGE     5

FIVE ELEMENT FRAME--ROD ELEMENTS
                                                                                    LOAD FACTOR 1
                                      S T R E S S E S   I N   R O D   E L E M E N T S      ( C R O D )
 ELEMENT       AXIAL         SAFETY      TORSIONAL      SAFETY      ELEMENT       AXIAL        SAFETY      TORSIONAL      SAFETY
   ID.         STRESS        MARGIN        STRESS       MARGIN        ID.         STRESS       MARGIN        STRESS       MARGIN
     1      1.414214E+04                0.0
     3      1.414214E+04                0.0                            2      1.414214E+04                0.0
     5     -2.000000E+04   -1.0E+00     0.0                            4      1.414214E+04                0.0


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL       ( N =      6 )
          TIME ESTIMATE=       1          C AVG =      2          PC AVG =      0   SPILL GROUPS =      0                 S AVG =      1
        ADDITIONAL CORE= -25461           C MAX =      4           PCMAX =      0      PC GROUPS =      0   PREFACE LOOPS =      1
```

```
FIVE ELEMENT FRAME--ROD ELEMENTS



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR        IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR        IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD    2 EPSILON SUB E = -2.8105145E-14


                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 2

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	2.828427E+04		0.0		2	2.828427E+04		0.0	
3	2.828427E+04		0.0		4	2.828427E+04		0.0	
5	-4.000000E+04	-1.0E+00	0.0						

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL (N = 6)

TIME ESTIMATE= 1 C AVG = 2 PC AVG = 0 SPILL GROUPS = 0 S AVG = 1

ADDITIONAL CORE= -25461 C MAX = 4 PCMAX = 0 PC GROUPS = 0 PREFACE LOOPS = 1

```
PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD    3 EPSILON SUB E = -5.9034999E-14

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 3

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	3.535534E+04		0.0		2	3.535534E+04		0.0	
3	3.535534E+04		0.0		4	3.535534E+04		0.0	
5	-5.000000E+04	-1.0E+00	0.0						

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =     6 )
            TIME ESTIMATE=       1          C AVG =      2          PC AVG =      0   SPILL GROUPS =     0            S AVG =       1
        ADDITIONAL CORE= -25461             C MAX =      4           PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =       1
```

```
FIVE ELEMENT FRAME--ROD ELEMENTS



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR        IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR        IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                            MPYAD--NULL MATRIX PRODUCT
                                            METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD    4 EPSILON SUB E = -4.3735378E-13

                                            MPYAD--NULL MATRIX PRODUCT
                                            METHOD 3 T ,NBR PASSES =   1,EST. TIME =      .0
```

PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 4

S T R E S S E S I N R O D E L E M E N T S (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	4.242641E+04		0.0		2	4.242641E+04		0.0	
3	4.242641E+04		0.0		4	4.242641E+04		0.0	
5	-6.000000E+04	-1.0E+00	0.0						

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =      6 )
           TIME ESTIMATE=       1           C AVG =      2         PC AVG =     0   SPILL GROUPS =     0            S AVG =       1
        ADDITIONAL CORE= -25461             C MAX =      4          PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =       1
```

FIVE ELEMENT FRAME--ROD ELEMENTS

```
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD     5 EPSILON SUB E = -2.6328879E-13

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 5

S T R E S S E S I N R O D E L E M E N T S (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	4.949747E+04		0.0		2	4.949747E+04		0.0	
3	4.949747E+04		0.0		4	4.949747E+04		0.0	
5	-7.000000E+04	-1.0E+00	0.0						

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =    6 )
           TIME ESTIMATE=      1          C AVG =     2          PC AVG =     0  SPILL GROUPS =     0             S AVG =     1
         ADDITIONAL CORE= -25461          C MAX =     4           PCMAX =     0     PC GROUPS =     0  PREFACE LOOPS =     1
```

```
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0
*** USER INFORMATION MESSAGE 3035

FOR LOAD    6 EPSILON SUB E = -3.7678992E-13


                                        MPYAD--NULL MATRIX PRODUCT
                                        METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 6

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	5.426240E+04		0.0		2	5.426240E+04		0.0	
3	5.426240E+04		0.0		4	5.426240E+04		0.0	
5	-8.000000E+04	-1.0E+00	0.0						

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL      ( N =     6 )
          TIME ESTIMATE=      1        C AVG =     2        PC AVG =     0   SPILL GROUPS =     0           S AVG =     1
       ADDITIONAL CORE= -25461        C MAX =     4         PCMAX =     0      PC GROUPS =     0   PREFACE LOOPS =     1
```

```
FIVE ELEMENT FRAME--ROD ELEMENTS



*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KLR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK KRR       IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

                                             MPYAD--NULL MATRIX PRODUCT
                                             METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD    7 EPSILON SUB E = -2.0475619E-13

                                             MPYAD--NULL MATRIX PRODUCT
                                             METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

FIVE ELEMENT FRAME--ROD ELEMENTS

LO-) FACTOR 7

S T R E S S E S I N R O D E L E M E N T S (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
1	6.840453E+04		0.0		2	6.840453E+04		0.0	
3	6.840453E+04		0.0		4	6.840453E+04		0.0	
5	-1.000000E+05	-1.0E+00	0.0						

```
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS LOAD FACTOR 1

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.000000E-03	-4.828427E-03	0.0	0.0	0.0	0.0
3	G	-2.000000E-03	-4.828427E-03	0.0	0.0	0.0	0.0
4	G	0.0	-9.656854E-03	0.0	0.0	0.0	0.0
5	G	0.0	-1.165685E-02	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS LOAD FACTOR 2

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	4.000000E-03	-9.656854E-03	0.0	0.0	0.0	0.0
3	G	-4.000000E-03	-9.656854E-03	0.0	0.0	0.0	0.0
4	G	0.0	-1.931371E-02	0.0	0.0	0.0	0.0
5	G	0.0	-2.331371E-02	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 3

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.000000E-03	-1.207107E-02	0.0	0.0	0.0	0.0
3	G	-5.000000E-03	-1.207107E-02	0.0	0.0	0.0	0.0
4	G	0.0	-2.414214E-02	0.0	0.0	0.0	0.0
5	G	0.0	-2.914214E-02	0.0	0.0	0.0	0.0

LOAD FACTOR 4

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.500000E-02	-2.348528E-02	0.0	0.0	0.0	0.0
3	G	-1.500000E-02	-2.348528E-02	0.0	0.0	0.0	0.0
4	G	0.0	-4.697056E-02	0.0	0.0	0.0	0.0
5	G	0.0	-5.297056E-02	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 5

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	2.500000E-02	-3.449949E-02	0.0	0.0	0.0	0.0
3	G	-2.500000E-02	-3.449949E-02	0.0	0.0	0.0	0.0
4	G	0.0	-6.979899E-02	0.0	0.0	0.0	0.0
5	G	0.0	-7.679899E-02	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 6

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	3.500000E-02	-5.352480E-02	0.0	0.0	0.0	0.0
3	G	-3.500000E-02	-5.352480E-02	0.0	0.0	0.0	0.0
4	G	0.0	-1.070496E-01	0.0	0.0	0.0	0.0
5	G	0.0	-1.150496E-01	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS LOAD FACTOR 7

D I S P L A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.500000E-02	-1.018091E-01	0.0	0.0	0.0	0.0
3	G	-5.500000E-02	-1.018091E-01	0.0	0.0	0.0	0.0
4	G	0.0	-2.036181E-01	0.0	0.0	0.0	0.0
5	G	0.0	-2.136181E-01	0.0	0.0	0.0	0.0

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 1

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	2.000000E+04		0.0						

PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 2

S T R E S S E S I N R O D E L E M E N T S (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	4.000000E+04		0.0						

PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS LOAD FACTOR 3

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	5.000000E+04		0.0						

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 4

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	6.000000E+04		0.0						

PIECEWISE LINEAR ANALYSIS

LOAD FACTOR 5

FIVE ELEMENT FRAME--ROD ELEMENTS

S T R E S S E S I N R O D E L E M E N T S (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	7.000000E+04		0.0						

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 6

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	8.000000E+04		0.0						

FIVE ELEMENT FRAME--ROD ELEMENTS

LOAD FACTOR 7

S T R E S S E S   I N   R O D   E L E M E N T S   (C R O D)

ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN	ELEMENT ID.	AXIAL STRESS	SAFETY MARGIN	TORSIONAL STRESS	SAFETY MARGIN
6	1.000000E+05		0.0						

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 7,0
TIME 10
CEND
```

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.

```
 CARD                  C A S E   C O N T R O L   D E C K   E C H O
 COUNT
   1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 7
   2      SUBTITLE=DIRECT COMPLEX EIGENVALUE ANALYSIS
   3      LABEL=CANTILEVER BEAM WITH VISCOUS DAMPING.    INVERSE POWER METHOD.
   4       SPC= 11
   5      CMETHOD=51
   6      SET 4 = 1,3,5,7,9,11,13,15,17,19,21
   7      SET 5 =  1,5,9,13,17
   8      DISP(PHASE) = 4
   9      FORCE(PHASE) =  5
  10      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING.   INVERSE POWER METHOD.

```
                                S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT      .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
    1-      BAROR            31                      0.0      1.        0.0      1
    2-      CBAR     1                1        2
    3-      CBAR     2                2        3
    4-      CBAR     3                3        4
    5-      CBAR     4                4        5
    6-      CBAR     5                5        6
    7-      CBAR     6                6        7
    8-      CBAR     7                7        8
    9-      CBAR     8                8        9
   10-      CBAR     9                9        10
   11-      CBAR     10               10       11
   12-      CBAR     11               11       12
   13-      CBAR     12               12       13
   14-      CBAR     13               13       14
   15-      CBAR     14               14       15
   16-      CBAR     15               15       16
   17-      CBAR     16               16       17
   18-      CBAR     17               17       18
   19-      CBAR     18               18       19
   20-      CBAR     19               19       20
   21-      CBAR     20               20       21
   22-      CDAMP2   35      .25      13       2
   23-      EIGC     51      INV      MAX                        1.-6                         +EIGC51
   24-      +EIGC51  -50.    10.      -50.     300.     50.      4        3
   25-      GRDSET                                                         345
   26-      GRID     1                0.0
   27-      GRID     2                5.
   28-      GRID     3                10.
   29-      GRID     4                15.
   30-      GRID     5                20.
   31-      GRID     6                25.
   32-      GRID     7                30.
   33-      GRID     8                35.
   34-      GRID     9                40.
   35-      GRID     10               45.
   36-      GRID     11               50.
   37-      GRID     12               55.
   38-      GRID     13               60.
   39-      GRID     14               65.
   40-      GRID     15               70.
   41-      GRID     16               75.
   42-      GRID     17               80.
   43-      GRID     18               85.
   44-      GRID     19               90.
   45-      GRID     20               95.
   46-      GRID     21               100.
   47-      MAT1     32      30.+6             .3       7.324-4                               +STEEL
   48-      PBAR     31      32       .30680   7.490-3  7.490-3  1.498-2                      +P31
   49-      +P31     0.3125  0.       -0.3125  0.       0.       0.3125   0.       0.        +P31A
   50-      +P31A    0.75    0.75     0.
```

```
CANTILEVER BEAM WITH VISCOUS DAMPING.    INVERSE POWER METHOD.

                                   S O R T E D   B U L K   D A T A   E C H O
         CARD
         COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
          51-         SPC1    11      126     1
                      ENDDATA


     **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     34 STARTING WITH ID      1

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     21 STARTING WITH ID     35



*** USER INFORMATION MESSAGE 3028,       B =     5     BBAR =     4
                                         C =     0     CBAR =     0
                                         R =     8

*** USER INFORMATION MESSAGE 3027, UNSYMMETRIC COMPLEX DECOMPOSITION TIME ESTIMATE IS       0 SECONDS.
```

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.

C O M P L E X E I G E N V A L U E A N A L Y S I S S U M M A R Y (INVERSE POWER METHOD)

NUMBER OF EIGENVALUES EXTRACTED	3
NUMBER OF STARTING POINTS USED	3
NUMBER OF STARTING POINT OR SHIFT POINT MOVES . .	0
TOTAL NUMBER OF TRIANGULAR DECOMPOSITIONS	6
TOTAL NUMBER OF VECTOR ITERATIONS	43
REASON FOR TERMINATION	6

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.

C O M P L E X   E I G E N V A L U E   S U M M A R Y

ROOT NO.	EXTRACTION ORDER	EIGENVALUE (REAL)	EIGENVALUE (IMAG)	FREQUENCY (CYCLES)	DAMPING COEFFICIENT
1	1	-4.887057E+00	1.019589E+01	1.622726E+00	9.587503E-01
2	2	-7.702347E+00	6.805942E+01	1.083199E+01	2.263419E-01
3	3	-4.744382E+00	1.931617E+02	3.074263E+01	4.912344E-02

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.

COMPLEX EIGENVALUE = -4.887657E+00, 1.019589E+01

C O M P L E X E I G E N V E C T O R NO. 1

(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	3.415956E-43	1.793434E-02	0.0	0.0	0.0	3.489914E-03
		357.2138	352.4594	0.0	0.0	0.0	352.7260
5	G	6.747800E-43	6.789162E-02	0.0	0.0	0.0	6.405594E-03
		357.2138	353.0053	0.0	0.0	0.0	353.6197
7	G	9.913491E-43	1.441520E-01	0.0	0.0	0.0	8.753406E-03
		357.2138	353.6242	0.0	0.0	0.0	354.7165
9	G	1.283508E-42	2.410806E-01	0.0	0.0	0.0	1.054662E-02
		357.2138	354.3404	0.0	0.0	0.0	356.1127
11	G	1.544062E-42	3.582049E-01	0.0	0.0	0.0	1.180918E-02
		357.2138	355.1868	0.0	0.0	0.0	357.9560
13	G	1.766597E-42	4.753186E-01	0.0	0.0	0.0	1.258092E-02
		357.2138	356.2078	0.0	0.0	0.0	.4679
15	G	1.945632E-42	6.030293E-01	0.0	0.0	0.0	1.302078E-02
		357.2138	357.3756	0.0	0.0	0.0	2.7203
17	G	2.076759E-42	7.340173E-01	0.0	0.0	0.0	1.326609E-02
		357.2138	358.4497	0.0	0.0	0.0	3.8824
19	G	2.156750E-42	8.667040E-01	0.0	0.0	0.0	1.336308E-02
		357.2138	359.3248	0.0	0.0	0.0	4.3269
21	G	2.183634E-42	1.000000E+00	0.0	0.0	0.0	1.337914E-02
		357.2138	0.0	0.0	0.0	0.0	4.4001

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.
COMPLEX EIGENVALUE = -7.702347E+00, 6.605942E+01

C O M P L E X E I G E N V E C T O R NO. 2
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	4.068456E-35	8.949594E-02	0.0	0.0	0.0	1.621423E-02
		317.8289	197.1089	0.0	0.0	0.0	196.9636
5	G	8.036733E-35	2.916012E-01	0.0	0.0	0.0	2.259720E-02
		317.8289	196.8110	0.0	0.0	0.0	196.3830
7	G	1.180712E-34	5.116116E-01	0.0	0.0	0.0	2.002317E-02
		317.8289	196.4622	0.0	0.0	0.0	195.5660
9	G	1.528677E-34	6.642972E-01	0.0	0.0	0.0	1.032381E-02
		317.8289	196.1656	0.0	0.0	0.0	194.9154
11	G	1.839001E-34	7.032956E-01	0.0	0.0	0.0	3.865697E-03
		317.8289	196.2579	0.0	0.0	0.0	6.2839
13	G	2.104043E-34	5.881575E-01	0.0	0.0	0.0	1.949156E-02
		317.8289	197.9839	0.0	0.0	0.0	6.7812
15	G	2.317276E-34	3.317651E-01	0.0	0.0	0.0	3.319688E-02
		317.8289	207.4884	0.0	0.0	0.0	6.0618
17	G	2.473450E-34	1.401464E-01	0.0	0.0	0.0	4.238514E-02
		317.8289	307.6059	0.0	0.0	0.0	6.5576
19	G	2.568720E-34	5.344831E-01	0.0	0.0	0.0	4.664328E-02
		317.8289	353.7905	0.0	0.0	0.0	6.9662
21	G	2.600739E-34	1.000000E+00	0.0	0.0	0.0	4.745054E-02
		317.8289	0.0	0.0	0.0	0.0	7.0593

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.
COMPLEX EIGENVALUE = -4.744382E+00, 1.931617E+02

C O M P L E X E I G E N V E C T O R NO. 3
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	3.098330E-36	2.321009E-01	0.0	0.0	0.0	3.829996E-02
		235.4857	355.3217	0.0	0.0	0.0	355.0952
5	G	6.120368E-36	6.167289E-01	0.0	0.0	0.0	3.203183E-02
		235.4857	354.8120	0.0	0.0	0.0	353.4879
7	G	8.991703E-36	7.761933E-01	0.0	0.0	0.0	3.573308E-03
		235.4857	353.7960	0.0	0.0	0.0	208.2632
9	G	1.164163E-35	5.494772E-01	0.0	0.0	0.0	4.076978E-02
		235.4857	350.9601	0.0	0.0	0.0	178.2937
11	G	1.400490E-35	7.028759E-02	0.0	0.0	0.0	5.637592E-02
		235.4857	296.4966	0.0	0.0	0.0	176.8325
13	G	1.602333E-35	4.730885E-01	0.0	0.0	0.0	3.894542E-02
		235.4857	184.2269	0.0	0.0	0.0	177.4213
15	G	1.764720E-35	6.653697E-01	0.0	0.0	0.0	2.765368E-03
		235.4857	182.5221	0.0	0.0	0.0	359.1767
17	G	1.883655E-35	4.0[illegible]8532E-01	0.0	0.0	0.0	4.706312E-02
		235.4857	183.8495	0.0	0.0	0.0	.6844
19	G	1.956207E-35	2.177670E-01	0.0	0.0	0.0	7.401593E-02
		235.4857	355.5203	0.0	0.0	0.0	1.1669
21	G	1.980592E-35	1.000000E+00	0.0	0.0	0.0	8.008462E-02
		235.4857	0.0	0.0	0.0	0.0	1.2770

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.
COMPLEX EIGENVALUE = -4.887657E+00, 1.019589E+01

C O M P L E X F O R C E S I N B A R E L E M E N T S (C B A R)
(MAGNITUDE/PHASE)

ELEMENT ID.	BEND-MOMENT END-A PLANE 1	BEND-MOMENT END-A PLANE 2	BEND-MOMENT END-B PLANE 1	BEND-MOMENT END-B PLANE 2	- SHEAR - PLANE 1	- SHEAR - PLANE 2	AXIAL FORCE	TORQUE
1	8.489353E+01	0.0	7.841785E+01	0.0	1.312674E+00	0.0	3.153768E-37	0.0
	351.9746	0.0	352.7255	0.0	342.9664	0.0	357.2138	0.0
5	5.914992E+01	0.0	5.284089E+01	0.0	1.303765E+00	0.0	2.961121E-37	0.0
	356.0084	0.0	357.6897	0.0	342.2498	0.0	357.2138	0.0
9	3.483184E+01	0.0	2.944997E+01	0.0	1.262344E+00	0.0	2.478618E-37	0.0
	6.9766	0.0	12.8781	0.0	338.3079	0.0	357.2138	0.0
13	1.897237E+01	0.0	1.491965E+01	0.0	8.105758E-01	0.0	1.753491E-37	0.0
	50.3343	0.0	50.4574	0.0	49.8811	0.0	357.2138	0.0
17	5.266693E+00	0.0	3.040242E+00	0.0	4.452935E-01	0.0	8.567207E-38	0.0
	50.8255	0.0	50.9467	0.0	50.6598	0.0	357.2138	0.0

NASTRAN COURSE - - - DEMO. PROB. 7 DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE 11
DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.
COMPLEX EIGENVALUE = -7.702347E+00, 6.605942E+01

C O M P L E X F O R C E S I N B A R E L E M E N T S (C B A R)
(MAGNITUDE/PHASE)

ELEMENT ID.	BEND-MOMENT END-A PLANE 1	BEND-MOMENT END-A PLANE 2	BEND-MOMENT END-B PLANE 1	BEND-MOMENT END-B PLANE 2	- SHEAR - PLANE 1	- SHEAR - PLANE 2	AXIAL FORCE	TORQUE
1	4.769383E+02	0.0	3.641766E+02	0.0	2.255891E+01	0.0	3.756186E-29	0.0
	197.3319	0.0	196.9578	0.0	196.5397	0.0	317.8289	0.0
5	3.770222E+01	0.0	6.088799E+01	0.0	1.952827E+01	0.0	3.526739E-29	0.0
	186.6334	0.0	23.0066	0.0	196.7577	0.0	317.8289	0.0
9	2.805944E+02	0.0	3.225695E+02	0.0	8.643957E+00	0.0	2.952069E-29	0.0
	14.7615	0.0	12.8003	0.0	179.9627	0.0	317.8289	0.0
13	3.484310E+02	0.0	3.10781[illegible]E+02	0.0	8.023862E+00	0.0	2.088431E-29	0.0
	2.9624	0.0	5.3153	0.0	343.8637	0.0	317.8289	0.0
17	1.493642E+02	0.0	9.389402E+01	0.0	1.110253E+01	0.0	1.020365E-29	0.0
	9.9972	0.0	11.0474	0.0	8.2207	0.0	317.8289	0.0

DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER METHOD.
COMPLEX EIGENVALUE = -4.744382E+00, 1.931617E+02

C O M P L E X F O R C E S I N B A R E L E M E N T S (C B A R)
(MAGNITUDE/PHASE)

ELEMENT ID.	BEND-MOMENT END-A PLANE 1	BEND-MOMENT END-A PLANE 2	BEND-MOMENT END-B PLANE 1	BEND-MOMENT END-B PLANE 2	- SHEAR - PLANE 1	- SHEAR - PLANE 2	AXIAL FORCE	TORQUE
1	1.406084E+03	0.0	8.570275E+02	0.0	1.098295E+02	0.0	2.860521E-30	0.0
	355.6023	0.0	355.0819	0.0	356.4145	0.0	235.4857	0.0
5	5.598619E+02	0.0	8.258869E+02	0.0	5.325026E+01	0.0	2.685786E-30	0.0
	177.7669	0.0	176.8421	0.0	354.8971	0.0	235.4857	0.0
9	6.839716E+02	0.0	3.082820E+02	0.0	6.322194E+01	0.0	2.248147E-30	0.0
	174.6900	0.0	172.8306	0.0	176.8565	0.0	235.4857	0.0
13	7.454718E+02	0.0	9.695013E+02	0.0	4.651129E+01	0.0	1.590444E-30	0.0
	353.6007	0.0	357.8069	0.0	191.4052	0.0	235.4857	0.0
17	8.620882E+02	0.0	6.124908E+02	0.0	4.993507E+01	0.0	7.770586E-31	0.0
	1.6418	0.0	2.1338	0.0	.4347	0.0	235.4857	0.0

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 8,0
TIME 10
CEND
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD

```
                              C A S E    C O N T R O L   D E C K   E C H O
 CARD
 COUNT
   1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 8
   2      SUBTITLE=DIRECT FREQUENCY RESPONSE ANALYSIS
   3      LABEL=CANTILEVER BEAM WITH SINUSOIDAL LOAD
   4       SPC= 11
   5      DLOAD=61
   6      FREQUENCY=33
   7      OFREQ=ALL
   8       SET 13= 1,3,5,7,9,11,13 THRU 17,19,21
   9      DISP (PHASE)=13
  10      VELOCITY (PHASE)  =  13
  11      OLOAD(PHASE)=ALL
  12      BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

```
                         S O R T E D   B U L K   D A T A   E C H O
CARD
COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   1-       BAROR           31                                 0.0     1.      0.0     1
   2-       CBAR    1               1       2
   3-       CBAR    2               2       3
   4-       CBAR    3               3       4
   5-       CBAR    4               4       5
   6-       CBAR    5               5       6
   7-       CBAR    6               6       7
   8-       CBAR    7               7       8
   9-       CBAR    8               8       9
  10-       CBAR    9               9       10
  11-       CBAR    10              10      11
  12-       CBAR    11              11      12
  13-       CBAR    12              12      13
  14-       CBAR    13              13      14
  15-       CBAR    14              14      15
  16-       CBAR    15              15      16
  17-       CBAR    16              16      17
  18-       CBAR    17              17      18
  19-       CBAR    18              18      19
  20-       CBAR    19              19      20
  21-       CBAR    20              20      21
  22-       DAREA   62      16      2       1.0
  23-       FREQ1   33      7.      3.
  24-       GRDSET                                                          345
  25-       GRID    1               0.0
  26-       GRID    2               5.
  27-       GRID    3               10.
  28-       GRID    4               15.
  29-       GRID    5               20.
  30-       GRID    6               25.
  31-       GRID    7               30.
  32-       GRID    8               35.
  33-       GRID    9               40.
  34-       GRID    10              45.
  35-       GRID    11              50.
  36-       GRID    12              55.
  37-       GRID    13              60.
  38-       GRID    14              65.
  39-       GRID    15              70.
  40-       GRID    16              75.
  41-       GRID    17              80.
  42-       GRID    18              85.
  43-       GRID    19              90.
  44-       GRID    20              95.
  45-       GRID    21              100.
  46-       MAT1    32      30.+6           .3      7.324-4                         +STEEL
  47-       PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
  48-       +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
  49-       +P31A   0.75    0.75    0.
  50-       RLOAD2  61      62                      34
```

```
CANTILEVER BEAM WITH SINUSOIDAL LOAD

                              S O R T E D   B U L K   D A T A   E C H O
  CARD
  COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
   51-        SPC1    11       126      1
   52-        TABLED1 34
   53-        +T34            0.       1.      100.     1.     ENDT                     +T34
              ENDDATA


     **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE     34 STARTING WITH ID      1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH8 ( N =    60 )
            TIME ESTIMATE=      1          C AVG =      4          PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
        ADDITIONAL CORE= -22214            C MAX =      5           PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1

                                  METHOD 1 T ,NBR PASSES =    1,EST. TIME =       .1
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 3.000000E+00

C O M P L E X D I S P L A C E M E N T V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	8.34225[illegible]E-03	0.0	0.0	0.0	1.625941E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
5	G	0.0	3.1[illegible]514E-02	0.0	0.0	0.0	3.000681E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
7	G	0.0	6.7[illegible]452[illegible]E-02	0.0	0.0	0.0	4.131331E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
9	G	0.0	1.1[illegible]55[illegible]E-01	0.0	0.0	0.0	5.035520E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
11	G	0.0	1.[illegible]095E-01	0.0	0.0	0.0	5.745422E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
13	G	0.0	2.27[illegible]E-01	0.0	0.0	0.0	6.310988E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
14	G	0.0	2.[illegible]1721E-01	0.0	0.0	0.0	6.5[illegible]0754E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
15	G	0.0	2.[illegible]5812E-01	0.0	0.0	0.0	6.802497E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
16	G	0.0	3.[illegible]E-01	0.0	0.0	0.0	7.048514E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
17	G	0.0	3.6[illegible]1E-01	0.0	0.0	0.0	7.256981E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
19	G	0.0	4.377[illegible]22E-01	0.0	0.0	0.0	7.457475E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
21	G	0.0	5.12[illegible]974E-01	0.0	0.0	0.0	7.490793E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000

DIRECT FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 3.000000E+00

C O M P L E X V E L O C I T Y V E C T O R
(MAGNITUDE, PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	1.572478E-01	0.0	0.0	0.0	3.064827E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
5	G	0.0	5.872508E-01	0.0	0.0	0.0	5.656151E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
7	G	0.0	1.2731[illegible]E+00	0.0	0.0	0.0	7.787376E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
9	G	0.0	2.140540E+00	0.0	0.0	0.0	9.[illegible]1732E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
11	G	0.0	3.159384E+00	0.0	0.0	0.0	1.082987E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
13	G	0.0	4.2[illegible]7450E+00	0.0	0.0	0.0	1.1895[illegible]3E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
14	G	0.0	4.904129E+00	0.0	0.0	0.0	1.236673E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
15	G	0.0	5.533870E+00	0.0	0.0	0.0	1.282241E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
16	G	0.0	6.1[illegible]5501E+00	0.0	0.0	0.0	1.328614E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
17	G	0.0	6.861334E+00	0.0	0.0	0.0	1.367309E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
19	G	0.0	8.2519[illegible]E+00	0.0	0.0	0.0	1.405701E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
21	G	0.0	9.662233E+00	0.0	0.0	0.0	1.411981E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000

NASTRAN COURSE - - - DEMO. PROB. 8 DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE 7
DIRECT FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 7.000000E+00

C O M P L E X D I S P L A C E M E N T V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	7.245848E-04	0.0	0.0	0.0	1.426239E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
5	G	0.0	2.509045E-03	0.0	0.0	0.0	2.722388E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
7	G	0.0	6.137000E-03	0.0	0.0	0.0	3.922627E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
9	G	0.0	1.065039E-02	0.0	0.0	0.0	5.113493E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
11	G	0.0	1.641360E-02	0.0	0.0	0.0	6.457367E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
13	G	0.0	2.370137E-02	0.0	0.0	0.0	8.216039E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
14	G	0.0	2.808714E-02	0.0	0.0	0.0	9.306376E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
15	G	0.0	3.311034E-02	0.0	0.0	0.0	1.077754E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
16	G	0.0	3.841935E-02	0.0	0.0	0.0	1.252352E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
17	G	0.0	4.541142E-02	0.0	0.0	0.0	1.413511E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
19	G	0.0	6.0[illegible]349E-02	0.0	0.0	0.0	1.571199E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
21	G	0.0	7.459869E-02	0.0	0.0	0.0	1.598017E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000

NASTRAN COURSE - - - DYN. PROB. 8 DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE 8
DIRECT FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 7.000000E+00

C O M P L E X   V E L O C I T Y   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
3	G	0.0 0.0	3.1[illegible]90E-02 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	6.272920E-03 270.0000
5	G	0.0 0.0	1.23[illegible]3E-01 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	1.1[illegible]73[illegible]E-02 270.0000
7	G	0.0 0.0	2.6[illegible]9193E-01 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	1.725262E-02 270.0000
9	G	0.0 0.0	4.[illegible]4287E-01 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	2.2[illegible]E-02 270.0000
11	G	0.0 0.0	7.219110E-01 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	2.8400[illegible]E-02 270.0000
13	G	0.0 0.0	1.042441E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	3.[illegible]E-02 270.0000
14	G	0.0 0.0	1.2[illegible]5337E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	4.[illegible]9547E-02 270.0000
15	G	0.0 0.0	1.456269E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	4.[illegible]402[illegible]0E-02 270.0000
16	G	0.0 0.0	1.711762E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	5.[illegible]E-02 270.0000
17	G	0.0 0.0	2.006117E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	6.2[illegible]E-02 270.0000
19	G	0.0 0.0	2.[illegible]9439E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	6.910496E-02 270.0000
21	G	0.0 0.0	3.368986E+00 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	7.028446E-02 270.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 3.000000E+00

C O M P L E X   L O A D   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0	1.000000E+00	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0

CANTILEVER BEAM WITH SINUSOIDAL LOAD
FREQUENCY = 7.000000E+00

C O M P L E X   L O A D   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0	1.000000E+00	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0

* * * END OF JOB * * *

```
NASTRAN CONFIG=6,FILES=(NPTP,OPTP,PLT2)
```

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 9,0
TIME 10
  DIAG 1,14,19,22
CHKPNT YES
$         THE FILES PARAMETER ON THE NASTRAN CARD IS NOT AVAILABLE
$                        ON SPERRY/NASTRAN.
CEND
```

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM
   RESTART   NASTRAN ,DEMO     , 2/ 9/81,   6C038,
```

5/8-INCH DIAMETER STEEL BEAM

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 9
  2      SUBTITLE=DIRECT TRANSIENT ANALYSIS
  3      LABEL=  5/8-INCH DIAMETER STEEL BEAM
  4       SPC= 11
  5      DLOAD=92
  6      TSTEP=71
  7      SET 22 = 15
  8      SET 23 = 1
  9      SET 24 = 16
 10      SET 25 = 7,13,21
 11      SET 26 = 10,21
 12      DISP=25
 13      VELOCITY=26
 14      ELFORCE=22
 15      OLOAD=24
 16      SPCFORCE=23
 17      $
 18      $      XY PLOT ON LINE PRINTER
 19      $
 20      OUTPUT(XYPLOT)
 21      XYPAPLOT DISP RESPONSE/21(T2)
 22      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED.XSORT WILL RE-ORDER DECK.

5/8-INCH DIAMETER STEEL BEAM

S O R T E D   B U L K   D A T A   E C H O

```
CARD
COUNT        .   1  ..   2   .   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
  1-        BAROR           31                      0.0     1.      0.0     1
  2-        CBAR    1               1       2
  3-        CBAR    2               2       3
  4-        CBAR    3               3       4
  5-        CBAR    4               4       5
  6-        CBAR    5               5       6
  7-        CBAR    6               6       7
  8-        CBAR    7               7       8
  9-        CBAR    8               8       9
 10-        CBAR    9               9       10
 11-        CBAR    10              10      11
 12-        CBAR    11              11      12
 13-        CBAR    12              12      13
 14-        CBAR    13              13      14
 15-        CBAR    14              14      15
 16-        CBAR    15              15      16
 17-        CBAR    16              16      17
 18-        CBAR    17              17      18
 19-        CBAR    18              18      19
 20-        CBAR    19              19      20
 21-        CBAR    20              20      21
 22-        DAREA   62      16      2       2.0
 23-        GRDSET                                                  345
 24-        GRID    1               0.0
 25-        GRID    2               5.
 26-        GRID    3               10
 27-        GRID    4               15.
 28-        GRID    5               20.
 29-        GRID    6               25.
 30-        GRID    7               30.
 31-        GRID    8               35.
 32-        GRID    9               40.
 33-        GRID    10              45.
 34-        GRID    11              50.
 35-        GRID    12              55.
 36-        GRID    13              60.
 37-        GRID    14              65.
 38-        GRID    15              70.
 39-        GRID    16              75.
 40-        GRID    17              80.
 41-        GRID    18              85.
 42-        GRID    19              90.
 43-        GRID    20              95.
 44-        GRID    21              100.
 45-        MAT1    32      30.+6           .3      7.324-4                         +STEEL
 46-        PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
 47-        +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
 48-        +P31A   0.75    0.75    0.
 49-        SPC1    11      126     1
 50-        TABLED1 37                                                              +T37
```

DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

```
                              S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT      .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   51-      +T37    -1.     0.      0.      0.      0.005   1.      0.015   1.0     +T*
   52-      +T*     0.020   0.      1.0     0.      ENDT
   53-      TLOAD1  92      62                      37
   54-      TSTEP   71      180     .00125  4
            ENDDATA
```

NASTRAN COURSE - - - DEMO. PROB. 9   FEBRUARY 9, 1981   NASTRAN 12/15/80   PAGE   6
DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
OPTIONS IN EFFECT   GO      ERR=2   NOLIST  NODECK  NOREF   NOOSCAR

   1  BEGIN     NO.9 DIRECT TRANSIENT RESPONSE ANALYSIS - SERIES P $

   2  FILE      KGGX=TAPE/KGG=TAPE/UDVT=APPEND/TOL=APPEND $

   3  GP1       GEOM1,GEOM2,/GPL,EQEXIN,GPDT,CSTM,BGPDT,SIL/V,N,LUSET/   V,N,
                NOGPDT $

   4  SAVE      LUSET,NOGPDT $

   5  PURGE     USET,GM,GO,KAA,BAA,MAA,K4AA,PST,KFS,QP,EST,ECT,PLTSETX,PLTPAR,
                GPSETS,ELSETS/NOGPDT $

   6  CHKPNT    GPL,EQEXIN,GPDT,CSTM,BGPDT,SIL,USET,GM,GO,KAA,BAA,MAA,K4AA,
                PST,KFS,QP,EST,ECT,PLTSETX,PLTPAR,GPSETS,ELSETS $

   7  COND      LBL5,NOGPDT $

   8  GP2       GEOM2,EQEXIN/ECT $

   9  CHKPNT    ECT $

  10  PARAML    PCDB//C,N,PRES/C,N,/C,N,/C,N,/V,N,NOPCDB $

  11  PURGE     PLTSETX,PLTPAR,GPSETS,ELSETS/NOPCDB $

  12  COND      P1,NOPCDB $

  13  PLTSET    PCDB,EQEXIN,ECT/PLTSETX,PLTPAR,GPSETS,ELSETS/V,N,NSIL/   V,N,
                JUMPPLOT=-1 $

  14  SAVE      NSIL,JUMPPLOT $

  15  PRTMSG    PLTSETX// $

  16  PARAM     //C,N,MPY/V,N,PLTFLG/C,N,1/C,N,1 $

  17  PARAM     //C,N,MPY/V,N,PFILE/C,N,0/C,N,0 $

  18  COND      P1,JUMPPLOT $

  19  PLOT      PLTPAR,GPSETS,ELSETS,CASECC,BGPDT,EQEXIN,SIL,,ECT,,/PLOTX1/V,N,
                NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $

  20  SAVE      JUMPPLOT,PLTFLG,PFILE $

  21  PRTMSG    PLOTX1// $
```

AD-A096 867 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT.(U)
FEB 81 G C EVERSTINE, M M HURWITZ
UNCLASSIFIED DTNSRDC/CMLD-81-04 NL

4 OF 5
AD
A096867

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
22  LABEL    P1 $

23  CHKPNT   PLTPAR,GPSETS,ELSETS $

24  GP3      GEOM3,EQEXIN,GEOM2/SLT,GPTT/V,N,NOGRAV $

25  CHKPNT   SLT,GPTT $

26  TA1      ECT,EPT,BGPDT,SIL,GPTT,CSTM/EST,GEI,GPECT,,/V,N,LUSET/V,N,
             NOSIMP=-1/C,N,1/V,N,NOGENL=-1/V,N,GENEL $

27  SAVE     NOSIMP,NOGENL,GENEL $

28  PURGE    K4GG,GPST,OGPST,MGG,BGG,  K4NN,K4FF,K4AA,MNN,MFF,MAA,BNN,BFF,
             BAA,KGGX/NOSIMP/ OGPST/GENEL $

29  CHKPNT   EST,GPECT,GEI,K4GG,GPST,MGG,BGG,KGGX,OGPST,  K4NN,K4FF,K4AA,
             MNN,MFF,MAA,BNN,BFF,BAA $

30  COND     LBL1,NOSIMP $

31  PARAM    //C,N,ADD/V,N,NOKGGX/C,N,1/C,N,0 $

32  PARAM    //C,N,ADD/V,N,NOMGG/C,N,1/C,N,0 $

33  PARAM    //C,N,ADD/V,N,NOBGG=-1/C,N,1/C,N,0 $

34  PARAM    //C,N,ADD/V,N,NOK4GG/C,N,1/C,N,0 $

35  EMG      EST,CSTM,MPT,DIT,GEOM2,/KELM,KDICT,MELM,MDICT,BELM,BDICT/   V,
             N,NOKGGX/V,N,NOMGG/V,N,NOBGG/V,N,NOK4GG/C,N,/C,Y,COUPMASS/C,Y,
             CPBAR/C,Y,CPROD/C,Y,CPQUAD1/C,Y,CPQUAD2/C,Y,CPTRIA1/C,Y,
             CPTRIA2/C,Y,CPTUBE/C,Y,CPQDPLT/C,Y,CPTRPLT/C,Y,CPTRBSC $

36  SAVE     NOKGGX,NOMGG,NOBGG,NOK4GG $

37  CHKPNT   KELM,KDICT,MELM,MDICT,BELM,BDICT $

38  COND     LBLKGGX,NOKGGX $

39  EMA      GPECT,KDICT,KELM/KGGX,GPST $

40  CHKPNT   KGGX,GPST $

41  LABEL    LBLKGGX $

42  COND     LBLMGG,NOMGG $

43  EMA      GPECT,MDICT,MELM/MGG,/C,N,-1/C,Y,WTMASS=1.0 $
```

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
44  CHKPNT   MGG $
45  LABEL    LBLMGG $
46  COND     LBLBGG,NOBGG $
47  EMA      GPECT,BDICT,BELM/BGG, $
48  CHKPNT   BGG $
49  LABEL    LBLBGG $
50  COND     LBLK4GG,NOK4GG $
51  EMA      GPECT,KDICT,KELM/K4GG,/V,N,NOK4GG $
52  CHKPNT   K4GG $
53  LABEL    LBLK4GG $
54  PURGE    MNN,MFF,MAA/NOMGG $
55  PURGE    BNN,BFF,BAA/NOBGG $
56  CHKPNT   MGG,MNN,MFF,MAA,BGG,BNN,BFF,BAA $
57  COND     LBL1,GRDPNT $
58  COND     ERROR3,NOMGG $
59  GPWG     BGPDT,CSTM,EQEXIN,MGG/OGPWG/V,Y,GRDPNT=-1/C,Y,WTMASS $
60  OFP      OGPWG,,,,,// $
61  LABEL    LBL1 $
62  EQUIV    KGGX,KGG/NOGENL $
63  CHKPNT   KGG $
64  COND     LBL11,NOGENL $
65  SMA3     GEI,KGGX/KGG/V,N,LUSET/V,N,NOGENL/V,N,NOSIMP $
66  CHKPNT   KGG $
67  LABEL    LBL11 $
68  PARAM    //C,N,MPY/V,N,NSKIP/C,N,0/C,N,0 $
```

5/8-INCH DIAMETEP STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
 69  GP4      CASECC,GEOM4,EQEXIN,GPDT,BGPDT,CSTM/RG,,USET,ASET/  V,N,LUSET/
              V,N,MPCF1/V,N,MPCF2/V,N,SINGLE/V,N,OMIT/V,N,REACT/V,N,NSKIP/V,
              N,REPEAT/V,N,NOSET/V,N,NOL/V,N,NOA/C,Y,SUBID $
 70  SAVE     MPCF1,SINGLE,OMIT,NOSET,REACT,MPCF2,NSKIP,REPEAT,NOL,NOA $
 71  PURGE    GM,GMD/MPCF1/GO,GOD/OMIT/KFS,PST,QP/SINGLE $
 72  CHKPNT   GM,GMD,RG,GO,GOD,KFS,PST,QP,USET $
 73  COND     LBL4,GENEL $
 74  COND     LBL4,NOSIMP $
 75  GPSP     GPL,GPST,USET,SIL/OGPST/V,N,NOGPST $
 76  SAVE     NOGPST $
 77  COND     LBL4,NOGPST $
 78  OFP      OGPST,,,,,// $
 79  LABEL    LBL4 $
 80  EQUIV    KGG,KNN/MPCF1/MGG,MNN/MPCF1/ BGG,BNN/MPCF1/K4GG,K4NN/MPCF1 $
 81  CHKPNT   KNN,MNN,BNN,K4NN $
 82  COND     LBL2,MPCF1 $
 83  MCE1     USET,RG/GM $
 84  CHKPNT   GM $
 85  MCE2     USET,GM,KGG,MGG,BGG,K4GG/KNN,MNN,BNN,K4NN $
 86  CHKPNT   KNN,MNN,BNN,K4NN $
 87  LABEL    LBL2 $
 88  EQUIV    KNN,KFF/SINGLE/MNN,MFF/SINGLE/BNN,BFF/SINGLE/K4NN,K4FF/SINGLE $
 89  CHKPNT   KFF,MFF,BFF,K4FF $
 90  COND     LBL3,SINGLE $
 91  SCE1     USET,KNN,MNN,BNN,K4NN/KFF,KFS, ,MFF,BFF,K4FF $
 92  CHKPNT   KFS,KFF,MFF,BFF,K4FF $
```

DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
 93  LABEL    LBL3 $
 94  EQUIV    KFF,KAA/OMIT $
 95  EQUIV    MFF,MAA/OMIT $
 96  EQUIV    BFF,BAA/OMIT $
 97  EQUIV    K4FF,K4AA/OMIT $
 98  CHKPNT   KAA,MAA,BAA,K4AA $
 99  COND     LBL5,OMIT $
100  SMP1     USET,KFF,,,/GO,KAA,KOO,LOO,,,,, $
101  CHKPNT   GO,KAA $
102  COND     LBLM,NOMGG $
103  SMP2     USET,GO,MFF/MAA $
104  CHKPNT   MAA $
105  LABEL    LBLM $
106  COND     LBLB,NOBGG $
107  SMP2     USET,GO,BFF/BAA $
108  CHKPNT   BAA $
109  LABEL    LBLB $
110  COND     LBL5 NOK4GG $
111  SMP2     USET,GO,K4FF/K4AA $
112  CHKPNT   K4AA $
113  LABEL    LBL5 $
114  DPD      DYNAMICS,GPL,SIL,USET/GPLD,SILD,USETD,TFPOOL,DLT,,,NLFT,TRL,,
              EQDYN/V,N,LUSET/V,N,LUSETD/V,N,NOTFL/V,N,NODLT/V,N,NOPSDL/  V,
              N,NOFRL/V,N,NONLFT/V,N,NOTRL/V,N,NOEED/C,N,/V,N,NOUE $
115  SAVE     LUSETD,NODLT,NONLFT,NOTRL,NOUE $
116  PURGE    PNLD/NONLFT$
```

5/8-INCH DIAMETEP STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
117  EQUIV    GO,GOD/NOUE/GM,GMD/NOUE $

118  CHKPNT   USETD,EQDYN,TFPOOL,DLT,TRL,GOD,GMD,NLFT,PNLD,SILD,GPLD $

119  BMG      MATPOOL,BGPDT,EQEXIN,CSTM/BDPOOL/V,N,NOKBFL/V,N,NOABFL/ V,N,
              MFACT $

120  SAVE     MFACT,NOKBFL,NOABFL $

121  PARAM    //C,N,AND/V,N,NOFL/V,N,NOABFL/V,N,NOKBFL $

122  PURGE    KBFL/NOKBFL/ ABFL/NOABFL $

123  COND     LBLFL3,NOFL $

124  MTRXIN,  ,BDPOOL,EQDYN,,/ABFL,KBFL,/V,N,LUSETD/V,N,NOABFL/V,N,NOKBFL/C,
              N,0 $

125  SAVE     NOABFL,NOKBFL $

126  LABEL    LBLFL3 $

127  CHKPNT   ABFL,KBFL $

128  MTRXIN   CASECC,MATPOOL,EQDYN,,TFPOOL/K2DPP,M2DPP,B2PP/V,N,LUSETD/V,N,
              NOK2DPP/V,N,NOM2DPP/V,N,NOB2PP $

129  SAVE     NOK2DPP,NOM2DPP,NOB2PP $

130  PARAM    //C,N,AND/V,N,NOM2PP/V,N,NOABFL/V,N,NOM2DPP $

131  PARAM    //C,N,AND/V,N,NOK2PP/V,N,NOFL /V,N,NOK2DPP $

132  EQUIV    M2DPP,M2PP/NOABFL $

133  ADD5     ABFL,KBFL,K2DPP,,/K2PP/C,N,(-1.0,0.0) $

134  COND     LBLFL2,NOABFL $

135  TRNSP    ABFL/ABFLT $

136  ADD      ABFLT,M2DPP/M2PP/V,N,MFACT $

137  LABEL    LBLFL2 $

138  PARAM    //C,N,AND/V,N,KDEKA/V,N,NOUE/V,N,NOK2PP $

139  PARAM    //C,N,AND/V,N,MDEMA/V,N,NOUE/V,N,NOM2PP $

140  PARAM    //C,N,AND/V,N,KDEK2/V,N,NOGENL/V,N,NOSIMP $
```

5/8-INCH DIAMETEP STEEL BEAM '

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
141  PURGE    K2DD/NOK2PP/M2DD/NOM2PP/B2DD/NOB2PP $

142  EQUIV    M2PP.M2DD/NOA/B2PP,B2DD/NOA/K2PP,K2DD/NOA/MAA,MDD/MDEMA/  KAA,
              KDD/KDEKA $

143  CHKPNT   K2PP,M2PP,B2PP,K2DD,M2DD,B2DD,MDD,KDD $

144  COND     LBL16,NOGPDT $

145  GKAD     USETD,GM,GO,KAA,BAA,MAA,K4AA,K2PP,M2PP,B2PP/KDD,BDD,MDD,GMD,
              GOD,K2DD,M2DD,B2DD/C,N,TRANRESP/C,N,DISP/C,N,DIRECT/C,Y,G=0.0/
              C,Y,W3=0.0/C,Y,W4=0.0/V,N,NOK2PP/V,N,NOM2PP/V,N,NOB2PP/ V,N,
              MPCF1/V,N,SINGLE/V,N,OMIT/V,N,NOUE/V,N,NOK4GG/V,N,NOBGG/V,N,
              KDEK2/C,N,-1 $

146  LABEL    LBL16 $

147  EQUIV    M2DD,MDD/NOSIMP/B2DD,BDD/NOGPDT/K2DD,KDD/KDEK2 $

148  CHKPNT   KDD,BDD,MDD,GMD,GOD $

149  COND     ERROR1,NOTRL $

150  PARAM    //C,N,ADD/V,N,NEVER/C,N,1/C,N,0 $

151  PARAM    //C,N,MPY/V,N,REPEATT/C,N,1/C,N,-1 $

152  PARAM    //C,N,MPY/V,N,CARDNO/C,N,0/C,N,0 $

153  JUMP     LBL13 $

154  LABEL    LBL13 $

155  PURGE    PNLD,OUDV1,OPNL1,OUDV2,OPNL2,XYPLTTA,OPP1,OQP1,OUPV1,OES1,OEF1,
              OPP2,OQP2,OUPV2,OES2,OEF2,PLOTX2,XYPLTT/NEVER $

156  CASE     CASECC,/CASEXX/C,N,TRAN/V,N,REPEATT/V,N,NOLOOP $

157  SAVE     REPEATT,NOLOOP $

158  CHKPNT   CASEXX $

159  PARAM    //C,N,MPY/V,N,NCOL/C,N,0/C,N,1 $

160  TRLG     CASEXX,USETD,DLT,SLT,BGPDT,SIL,CSTM,TRL,DIT,GMD,GOD,,EST,MGG/
              PPT,PST,PDT,PD,,TOL/V,N,NOSET/V,N,PDEPDO/V,N,NCOL $

161  SAVE     PDEPDO,NOSET $

162  CHKPNT   PPT,PST,PDT,PD,TOL $
```

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
163  EQUIV    PD,PDT/PDEPDO/PPT,PDT/NOSET $

164  CHKPNT   PDT $

165  TRD      CASEXX,TRL,NLFT,DIT,KDD,BDD,MDD,PD/UDVT,PNLD/C,N,DIRECT/V,N,
              NOUE/V,N,NONCUP/V,N,NCOL/C,Y,ISTART $

166  SAVE     NCOL $

167  CHKPNT   UDVT,PNLD $

168  VDR      CASEXX,EQDYN,USETD,UDVT,TOL,XYCDB,PNLD/OUDV1,OPNL1/ C,N,
              TRANRESP/C,N,DIRECT/C,N,0/V,N,NOD/V,N,NOP/C,N,0 $

169  SAVE     NOD,NOP $

170  CHKPNT   OUDV1,OPNL1 $

171  COND     LBL15,NOD $

172  SDR3     OUDV1,OPNL1,,,,/OUDV2,OPNL2,,,, $

173  OFP      OUDV2,OPNL2,,,,//V,N,CARDNO $

174  SAVE     CARDNO $

175  CHKPNT   OPNL2,OUDV2 $

176  XYTRAN   XYCDB,OUDV2,OPNL2,,,/XYPLTTA/C,N,TRAN/C,N,DSET/V,N,PFILE/V,N,
              CARDNO $

177  SAVE     PFILE,CARDNO $

178  XYPLOT   XYPLTTA// $

179  LABEL    LBL15 $

180  PARAM    //C,N,AND/V,N,PJUMP/V,N,NOP/V,N,JUMPPLOT $

181  COND     LBL18,PJUMP $

182  EQUIV    UDVT,UPV/NOA $

183  COND     LBL17,NOA $

184  SDR1     USETD,,UDVT,,,GOD,GMD,PST,KFS,,/UPV,,QP/C,N,1/C,N,DYNAMICS $

185  LABEL    LBL17 $

186  CHKPNT   UPV,QP $
```

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
187  SDR2      CASEXX,CSTM,MPT,DIT,EQDYN,SILD,,,BGPDT,TOL,QP,UPV,EST,XYCDB,
               PPT/OPP1,OQP1,OUPV1,OES1,OEF1,PUGV/C,N,TRANRESP $

188  SDR3      OPP1,OQP1,OUPV1,OES1,OEF1,/OPP2,OQP2,OUPV2,OES2,OEF2, $

189  CHKPNT    OPP2,OQP2,OUPV2,OES2,OEF2 $

190  OFP       OPP2,OQP2,OUPV2,OEF2,OES2,//V,N,CARDNO $

191  SAVE      CARDNO $

192  COND      P2,JUMPPLOT $

193  PLOT      PLTPAR,GPSETS,ELSETS,CASEXX,BGPDT,EQEXIN,SIL,,PUGV,GPECT,OES1/
               PLOTX2/V,N,NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $

194  SAVE      PFILE $

195  PRTMSG    PLOTX2// $

196  LABEL     P2 $

197  XYTRAN    XYCDB,OPP2,OQP2,OUPV2,OES2,OEF2/XYPLTT/C,N,TRAN/C,N,PSET/-,N,
               PFILE/V,N,CARDNO $

198  SAVE      PFILE,CARDNO $

199  XYPLOT    XYPLTT// $

200  LABEL     LBL18 $

201  COND      FINIS,REPEATT $

202  REPT      LBL13,100 $

203  JUMP      ERROR2 $

204  JUMP      FINIS $

205  LABEL     ERROR2 $

206  PRTPARM   //C,N,-2/C,N,DIRTRD $

207  LABEL     ERROR1 $

208  PRTPARM   //C,N,-1/C,N,DIRTRD $

209  LABEL     ERROR3 $

210  PRTPARM   //C,N,-3/C,N,DIRTRD $
```

5/8-INCH DIAMETEP STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

```
211  LABEL    FINIS $

212  END      $

      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**
```

```
  5/8-INCH DIAMETER STEEL BEAM
    CONTINUATION OF CHECKPOINT DICTIONARY

    1,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =      5


    2,   REENTER AT DMAP SEQUENCE NUMBER      7
    3,   GPL      ,  FLAGS = 0,   REEL =  1,   FILE =      6
         FILE GPL      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    4,   EQEXIN   ,  FLAGS = 0,   REEL =  1,   FILE =      7
         FILE EQEXIN   CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    5,   GPDT     ,  FLAGS = 0,   REEL =  1,   FILE =      8
         FILE GPDT     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    6,   BGPDT    ,  FLAGS = 0,   REEL =  1,   FILE =      9
         FILE BGPDT    CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    7,   SIL      ,  FLAGS = 0,   REEL =  1,   FILE =     10
         FILE SIL      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
    8,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     11
    9,   CSTM     ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE CSTM     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   10,   USET     ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE USET     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   11,   GM       ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE GM       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   12,   GO       ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE GO       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   13,   KAA      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE KAA      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   14,   BAA      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE BAA      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   15,   MAA      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE MAA      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   16,   K4AA     ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE K4AA     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   17,   PST      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE PST      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   18,   KFS      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE KFS      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   19,   QP       ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE QP       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   20,   EST      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE EST      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   21,   ECT      ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE ECT      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   22,   PLTSETX  ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE PLTSETX  CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   23,   PLTPAR   ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE PLTPAR   CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   24,   GPSETS   ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE GPSETS   CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   25,   ELSETS   ,  FLAGS = 0,   REEL =  0,   FILE =      0
         FILE ELSETS   CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

   26,   REENTER AT DMAP SEQUENCE NUMBER     10
   27,   ECT      ,  FLAGS = 0,   REEL =  1,   FILE =     12
         FILE ECT      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
   28,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     13
```

```
29,   REENTER AT DMAP SEQUENCE NUMBER     24
30,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =       14

31,   REENTER AT DMAP SEQUENCE NUMBER     26
32,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =       15
33,   SLT       ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE SLT      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
34,   GPTT      ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE GPTT     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

35,   REENTER AT DMAP SEQUENCE NUMBER     30
36,   EST       ,   FLAGS = 0,   REEL =  1,   FILE =       16
      FILE EST      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
37,   GPECT     ,   FLAGS = 0,   REEL =  1,   FILE =       17
      FILE GPECT    CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
38,   XVPS      ,   FLAGS = 0,   REEL =  1,   FILE =       18
39,   GEI       ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE GEI      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
40,   K4GG      ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE K4GG     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
41,   GPST      ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE GPST     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
42,   MGG       ,   FLAGS = 0,   REEL =  0,   FILE =        [illegible]
      FILE MGG      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
43,   BGG       ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE BGG      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
44,   KGGX      ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE KGGX     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
45,   OGPST     ,   FLAGS = 0,   REEL =  0,   FILE =        0
      FILE OGPST    CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

```
  5/8-INCH DIAMETER STEEL BEAM

   ADDITIONS TO CHECKPOINT DICTIONARY

  46,   K4NN     ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE K4NN    CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  47,   K4FF     ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE K4FF    CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  48,   MNN      ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE MNN     CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  49,   MFF      ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE MFF     CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  50,   BNN      ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE BNN     CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  51,   BFF      ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE BFF     CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1

  52,   REENTER AT DMAP SEQUENCE NUMBER    38
  53,   KELM     ,  FLAGS = 0,   REEL =  1,   FILE =     19
        FILE KELM    CONTAINS         3 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  54,   KDICT    ,  FLAGS = 0,   REEL =  1,   FILE =     20
        FILE KDICT   CONTAINS         1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  55,   MELM     ,  FLAGS = 0,   REEL =  1,   FILE =     21
        FILE MELM    CONTAINS         3 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  56,   MDICT    ,  FLAGS = 0,   REEL =  1,   FILE =     22
        FILE MDICT   CONTAINS         1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  57,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     23
  58,   BELM     ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE BELM    CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  59,   BDICT    ,  FLAGS = 0,   REEL =  0,   FILE =      0
        FILE BDICT   CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

  60,   REENTER AT DMAP SEQUENCE NUMBER    41
  61,   KGGX     ,  FLAGS = 0,   REEL =  1,   FILE =     24
        FILE KGGX    CONTAINS         2 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  62,   GPST     ,  FLAGS = 0,   REEL =  1,   FILE =     25
        FILE GPST    CONTAINS         1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  63,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     26

  64,   REENTER AT DMAP SEQUENCE NUMBER    45
  65,   MGG      ,  FLAGS = 0,   REEL =  1,   FILE =     27
        FILE MGG     CONTAINS         1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  66,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     28

  67,   REENTER AT DMAP SEQUENCE NUMBER    57
  68,   MGG      ,  FLAGS = 0,   REEL =  1,   FILE =     29
        FILE MGG     CONTAINS         1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  69,   XVPS     ,  FLAGS = 0,   REEL =  1,   FILE =     30

  70,   REENTER AT DMAP SEQUENCE NUMBER    64
  71,   KGGX     ,  FLAGS = 4,   REEL =  1,   FILE =     24
        FILE KGGX    CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  72,   KGG      ,  FLAGS = 4,   REEL =  1,   FILE =     24
        FILE KGG     CONTAINS         0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

```
     73,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     31

*** USER INFORMATION MESSAGE 2119, SUBROUTINE GP4PRT - DIAG 22 SET DISP SETS VS. DOF FOLLOWS.
```

5/8-INCH DIAMETER STEEL BEAM

SPC DISPLACEMENT SET

	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-
1=	1-1	1-2	1-3	1-4	1-5	1-6	2-3	2-4	2-5	3-3
11=	3-4	3-5	4-3	4-4	4-5	5-3	5-4	5-5	6-3	6-4
21=	6-5	7-3	7-4	7-5	8-3	8-4	8-5	9-3	9-4	9-5
31=	10-3	10-4	10-5	11-3	11-4	11-5	12-3	12-4	12-5	13-3
41=	13-4	13-5	14-3	14-4	14-5	15-3	15-4	15-5	16-3	16-4
51=	16-5	17-3	17-4	17-5	18-3	18-4	18-5	19-3	19-4	19-5
61=	20-3	20-4	20-5	21-3	21-4	21-5				

5/8-INCH DIAMETER STEEL BEAM

ANALYSIS DISPLACEMENT SET

	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-
1 =	2-1	2-2	2-6	3-1	3-2	3-6	4-1	4-2	4-6	5-1
11 =	5-2	5-6	6-1	6-2	6-6	7-1	7-2	7-6	8-1	8-2
21 =	8-6	9-1	9-2	9-6	10-1	10-2	10-6	11-1	11-2	11-6
31 =	12-1	12-2	12-6	13-1	13-2	13-6	14-1	14-2	14-6	15-1
41 =	15-2	15-6	16-1	16-2	16-6	17-1	17-2	17-6	18-1	18-2
51 =	18-6	19-1	19-2	19-6	20-1	20-2	20-6	21-1	21-2	21-6

5/8-INCH DIAMETER STEEL BEAM

PERM SPC DISPLACEMENT SET

	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-
1=	1-3	1-4	1-5	2-3	2-4	2-5	3-3	3-4	3-5	4-3
11=	4-4	4-5	5-3	5-4	5-5	6-3	6-4	6-5	7-3	7-4
21=	7-5	8-3	8-4	8-5	9-3	9-4	9-5	10-3	10-4	10-5
31=	11-3	11-4	11-5	12-3	12-4	12-5	13-3	13-4	13-5	14-3
41=	14-4	14-5	15-3	15-4	15-5	16-3	16-4	16-5	17-3	17-4
51=	17-5	18-3	18-4	18-5	19-3	19-4	19-5	20-3	20-4	20-5
61=	21-3	21-4	21-5							

5/8-INCH DIAMETER STEEL BEAM

BGRY SPC DISPLACEMENT SET

	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-
1=	1-1	1-2	1-6							

5/8-INCH DIAMETEP STEEL BEAM

ADDITIONS TO CHECKPOINT DICTIONARY

```
 74,   REENTER AT DMAP SEQUENCE NUMBER    73
 75,   USET     ,   FLAGS = 0,   REEL =  1,   FILE =      32
       FILE USET      CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 76,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      33
 77,   GMD      ,   FLAGS = 0,   REEL =  0,   FILE =       0
       FILE GMD       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 78,   RG       ,   FLAGS = 0,   REEL =  0,   FILE =       0
       FILE RG        CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 79,   GOD      ,   FLAGS = 0,   REEL =  0,   FILE =       0
       FILE GOD       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

 80,   REENTER AT DMAP SEQUENCE NUMBER    82
 81,   KNN      ,   FLAGS = 4,   REEL =  1,   FILE =      24
       FILE KNN       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 82,   MGG      ,   FLAGS = 4,   REEL =  1,   FILE =      29
       FILE MGG       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 83,   MNN      ,   FLAGS = 4,   REEL =  1,   FILE =      29
       FILE MNN       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 84,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      34

 85,   REENTER AT DMAP SEQUENCE NUMBER    90
 86,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      35
 87,   KFF      ,   FLAGS = 0,   REEL =  0,   FILE =       0
       FILE KFF       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

 88,   REENTER AT DMAP SEQUENCE NUMBER    93
 89,   KFS      ,   FLAGS = 0,   REEL =  1,   FILE =      36
       FILE KFS       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 90,   KFF      ,   FLAGS = 0,   REEL =  1,   FILE =      37
       FILE KFF       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 91,   MFF      ,   FLAGS = 0,   REEL =  1,   FILE =      38
       FILE MFF       CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 92,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      39

 93,   REENTER AT DMAP SEQUENCE NUMBER    99
 94,   KFF      ,   FLAGS = 4,   REEL =  1,   FILE =      37
       FILE KFF       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 95,   KAA      ,   FLAGS = 4,   REEL =  1,   FILE =      37
       FILE KAA       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 96,   MFF      ,   FLAGS = 4,   REEL =  1,   FILE =      38
       FILE MFF       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 97,   MAA      ,   FLAGS = 4,   REEL =  1,   FILE =      38
       FILE MAA       CONTAINS           0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 98,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =      40


 99,   REENTER AT DMAP SEQUENCE NUMBER   119
100,   USETD    ,   FLAGS = 0,   REEL =  1,   FILE =      41
       FILE USETD     CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
101,   EQDYN    ,   FLAGS = 0,   REEL =  1,   FILE =      42
       FILE EQDYN     CONTAINS           1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
102,   DLT      ,   FLAGS = 0,   REEL =  1,   FILE =      [illegible]
```

```
         FILE DLT      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
103,     TRL      ,    FLAGS = 0,   REEL =  1,    FILE =      44
         FILE TRL      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
104,     SILD     ,    FLAGS = 0,   REEL =  1,    FILE =      45
         FILE SILD     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
105,     GPLD     ,    FLAGS = 0,   REEL =  1,    FILE =      46
         FILE GPLD     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
106,     XVPS     ,    FLAGS = 0,   REEL =  1,    FILE =      47
107,     TFPOOL   ,    FLAGS = 0,   REEL =  0,    FILE =       0
         FILE TFPOOL   CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
108,     NLFT     ,    FLAGS = 0,   REEL =  0,    FILE =       0
         FILE NLFT     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
109,     PNLD     ,    FLAGS = 0,   REEL =  0,    FILE =       0
         FILE PNLD     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


110,     REENTER AT DMAP SEQUENCE NUMBER   128
111,     XVPS     ,    FLAGS = 0,   REEL =  1,    FILE =      48
112,     ABFL     ,    FLAGS = 0,   REEL =  0,    FILE =       0
         FILE ABFL     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
113,     KBFL     ,    FLAGS = 0,   REEL =  0,    FILE =       0
         FILE KBFL     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


114,     REENTER AT DMAP SEQUENCE NUMBER   144
```

```
  5/8-INCH DIAMETER STEEL BEAM

   ADDITIONS TO CHECKPOINT DICTIONARY

  115,   MDD      ,   FLAGS = 4,    REEL =  1,   FILE =      38
         FILE MDD       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  116,   KDD      ,   FLAGS = 4,    REEL =  1,   FILE =      37
         FILE KDD       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  117,   XVPS     ,   FLAGS = 0,    REEL =  1,   FILE =      49
  118,   K2PP     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE K2PP      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  119,   M2PP     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE M2PP      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  120,   B2PP     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE B2PP      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  121,   K2DD     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE K2DD      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  122,   M2DD     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE M2DD      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  123,   B2DD     ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE B2DD      CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.


  124,   REENTER AT DMAP SEQUENCE NUMBER   149
  125,   XVPS     ,   FLAGS = 0,    REEL =  1,   FILE =      50
  126,   BDD      ,   FLAGS = 0,    REEL =  0,   FILE =       0
         FILE BDD       CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.

  127,   REENTER AT DMAP SEQUENCE NUMBER   159
  128,   CASEXX   ,   FLAGS = 0,    REEL =  1,   FILE =      51
         FILE CASEXX    CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  129,   XVPS     ,   FLAGS = 0,    REEL =  1,   FILE =      52


(A MATRIX ROWS  COLS    TERMS     DENS)*(B MATRIX ROWS  COLS    TERMS     DENS) T    CORE    P1   P2   P3      TIME1      TIME2       TIME3
   301     126     1           1  .0079     307        1    47          3  .0851  0  13549.    1    1    0         .4         .5 *********
                                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =         .4
                                                   MPYAD--NULL MATRIX PRODUCT

(A MATRIX ROWS  COLS    TERMS     DENS)*(B MATRIX ROWS  COLS    TERMS     DENS) T    CORE    P1   P2   P3      TIME1      TIME2       TIME3
   304      60     1           1  .0166     307        1    47          3  .0851  0  13615.    1    1    0         .2         .3 *********
                                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =         .2

(A MATRIX ROWS  COLS    TERMS     DENS)*(B MATRIX ROWS  COLS    TERMS     DENS) T    CORE    P1   P2   P3      TIME1      TIME2       TIME3
   304      60     1           1  .0166     306        1   182         15  .0879  0  13615.    1    1    0         .7        1.0 *********
                                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =         .7

  130,   REENTER AT DMAP SEQUENCE NUMBER   163
  131,   PPT      ,   FLAGS = 0,    REEL =  1,   FILE =      53
         FILE PPT       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  132,   PST      ,   FLAGS = 0,    REEL =  1,   FILE =      54
         FILE PST       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  133,   PDT      ,   FLAGS = 0,    REEL =  1,   FILE =      55
         FILE PDT       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
  134,   PD       ,   FLAGS = 0,    REEL =  1,   FILE =      56
         FILE PD        CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

```
 135,   TOL      ,   FLAGS = 0,   REEL =  1,   FILE =     57
        FILE TOL      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 136,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     58

 137,   REENTER AT DMAP SEQUENCE NUMBER   165
 138,   PDT      ,   FLAGS = 0,   REEL =  1,   FILE =     59
        FILE PDT      CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 139,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     60


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 ( N =   60 )
           TIME ESTIMATE=       1          C AVG =     4          PC AVG =     0   SPILL GROUPS =     0            S AVG =     1
          ADDITIONAL CORE= -15639          C MAX =     5           PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =     1

 140,   REENTER AT DMAP SEQUENCE NUMBER   168
 141,   UDVT     ,   FLAGS = 0,   REEL =  1,   FILE =     61
        FILE UDVT     CONTAINS          9 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 142,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     62


 143,   REENTER AT DMAP SEQUENCE NUMBER   171
 144,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     63
 145,   OUDV1    ,   FLAGS = 0,   REEL =  0,   FILE =      0
        FILE OUDV1    CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 146,   OPNL1    ,   FLAGS = 0,   REEL =  0,   FILE =      0
        FILE OPNL1    CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
(A MATRIX ROWS  COLS   TERMS    DENS)*(B MATRIX ROWS  COLS   TERMS    DENS) T   CORE   P1  P2  P3    TIME1     TIME2     TIME3
   109      60    66        5  .0012      203      60    46     1799  .6521  1  29681.   1   1   1       .6        .6       2.7
                                                    METHOD 1 T ,NBR PASSES =   1,EST. TIME =       .6

 147,   REENTER AT DMAP SEQUENCE NUMBER   187
 148,   UPV      ,   FLAGS = 0,   REEL =  1,   FILE =     64
        FILE UPV      CONTAINS         12 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 149,   QP       ,   FLAGS = 0,   REEL =  1,   FILE =     65
        FILE QP       CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 150,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     66



 151,   REENTER AT DMAP SEQUENCE NUMBER   190
 152,   OPP2     ,   FLAGS = 0,   REEL =  1,   FILE =     67
        FILE OPP2     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 153,   OQP2     ,   FLAGS = 0,   REEL =  1,   FILE =     68
        FILE OQP2     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 154,   OUPV2    ,   FLAGS = 0,   REEL =  1,   FILE =     69
        FILE OUPV2    CONTAINS          3 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 155,   OEF2     ,   FLAGS = 0,   REEL =  1,   FILE =     70
        FILE OEF2     CONTAINS          1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
 156,   XVPS     ,   FLAGS = 0,   REEL =  1,   FILE =     71
```

5/8-INCH DIAMETER STEEL BEAM

ADDITIONS TO CHECKPOINT DICTIONARY

```
157,   OES2     ,   FLAGS = 0,   REEL =  0,   FILE =      0
       FILE OES2     CONTAINS          0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
```

5.8-INCH DIAMETER STEEL BEAM
POINT-ID = 16

L O A D V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	2.000000E+00	0.0	0.0	0.0	0.0
1.000000E-02	G	0.0	2.000000E+00	0.0	0.0	0.0	0.0
1.500000E-02	G	0.0	2.000000E+00	0.0	0.0	0.0	0.0
2.000000E-02	G	0.0	1.350031E-13	0.0	0.0	0.0	0.0
2.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
3.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
3.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
4.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
4.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
5.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
6.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
6.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
7.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
7.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
8.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
8.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
9.000000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
9.500000E-02	G	0.0	0.0	0.0	0.0	0.0	0.0
1.000000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.050000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.100000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.150000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.200000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.250000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.300000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.350000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.400000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.450000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.500000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.550000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.600000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.650000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.700000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.750000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.800000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.850000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.900000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
1.950000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.000000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.050000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.100000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.150000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.200000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0
2.250000E-01	G	0.0	0.0	0.0	0.0	0.0	0.0

5/8-INCH DIAMETER STEEL BEAM
POINT-ID = 1

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	1.965639E-03	0.0	0.0	0.0	-4.779542E-03
1.000000E-02	G	0.0	-1.673457E-01	0.0	0.0	0.0	-7.200995E-01
1.500000E-02	G	0.0	6.253526E-01	0.0	0.0	0.0	6.565333E+00
2.000000E-02	G	0.0	1.088026E+00	0.0	0.0	0.0	9.340235E+00
2.500000E-02	G	0.0	7.679030E-02	0.0	0.0	0.0	-3.919924E+00
3.000000E-02	G	0.0	-1.252495E+00	0.0	0.0	0.0	-2.149692E+01
3.500000E-02	G	0.0	-1.667455E+00	0.0	0.0	0.0	-2.775703E+01
4.000000E-02	G	0.0	-3.642030E-01	0.0	0.0	0.0	-1.556950E+01
4.500000E-02	G	0.0	4.564206E-02	0.0	0.0	0.0	-7.939560E+00
5.000000E-02	G	0.0	7.446852E-01	0.0	0.0	0.0	3.665219E-01
5.500000E-02	G	0.0	6.341104E-01	0.0	0.0	0.0	-1.297861E+00
6.000000E-02	G	0.0	-1.649124E-01	0.0	0.0	0.0	-1.281319E+01
6.500000E-02	G	0.0	-1.374576E+00	0.0	0.0	0.0	-2.705387E+01
7.000000E-02	G	0.0	-7.719084E-01	0.0	0.0	0.0	-2.219725E+01
7.500000E-02	G	0.0	1.644941E-01	0.0	0.0	0.0	-1.037792E+01
8.000000E-02	G	0.0	6.267570E-01	0.0	0.0	0.0	-3.242685E+00
8.500000E-02	G	0.0	8.929258E-01	0.0	0.0	0.0	-1.406941E+00
9.000000E-02	G	0.0	4.460443E-01	0.0	0.0	0.0	-9.587524E+00
9.500000E-02	G	0.0	-6.302868E-01	0.0	0.0	0.0	-2.539290E+01
1.000000E-01	G	0.0	-1.760971E+00	0.0	0.0	0.0	-3.837508E+01
1.050000E-01	G	0.0	-8.395098E-01	0.0	0.0	0.0	-2.946932E+01
1.100000E-01	G	0.0	-2.806322E-03	0.0	0.0	0.0	-1.917864E+01
1.150000E-01	G	0.0	5.198873E-01	0.0	0.0	0.0	-1.400338E+01
1.200000E-01	G	0.0	1.252713E-01	0.0	0.0	0.0	-1.902923E+01
1.250000E-01	G	0.0	-2.846221E-01	0.0	0.0	0.0	-2.715387E+01
1.300000E-01	G	0.0	-1.762003E+00	0.0	0.0	0.0	-4.300993E+01
1.350000E-01	G	0.0	-1.726349E+00	0.0	0.0	0.0	-4.266825E+01
1.400000E-01	G	0.0	-3.693894E-01	0.0	0.0	0.0	-2.667346E+01
1.450000E-01	G	0.0	6.575613E-01	0.0	0.0	0.0	-1.303215E+01
1.500000E-01	G	0.0	6.197261E-01	0.0	0.0	0.0	-1.150867E+01
1.550000E-01	G	0.0	1.124276E-01	0.0	0.0	0.0	-1.721737E+01
1.600000E-01	G	0.0	-4.759367E-01	0.0	0.0	0.0	-2.587224E+01
1.650000E-01	G	0.0	-1.421370E+00	0.0	0.0	0.0	-3.593672E+01
1.700000E-01	G	0.0	-7.336364E-01	0.0	0.0	0.0	-2.824213E+01
1.750000E-01	G	0.0	3.345989E-01	0.0	0.0	0.0	-1.375024E+01
1.800000E-01	G	0.0	1.069630E+00	0.0	0.0	0.0	-5.046022E+00
1.850000E-01	G	0.0	1.795129E-01	0.0	0.0	0.0	-1.372466E+01
1.900000E-01	G	0.0	-1.457096E-01	0.0	0.0	0.0	-2.146042E+01
1.950000E-01	G	0.0	-1.118363E+00	0.0	0.0	0.0	-3.382416E+01
2.000000E-01	G	0.0	-1.540574E+00	0.0	0.0	0.0	-3.868631E+01
2.050000E-01	G	0.0	-8.905221E-01	0.0	0.0	0.0	-2.891889E+01
2.100000E-01	G	0.0	5.207664E-01	0.0	0.0	0.0	-1.224928E+01
2.150000E-01	G	0.0	5.721971E-01	0.0	0.0	0.0	-1.009560E+01
2.200000E-01	G	0.0	-1.980969E-01	0.0	0.0	0.0	-1.860821E+01
2.250000E-01	G	0.0	-6.693453E-01	0.0	0.0	0.0	-2.534918E+01

5 8-INCH DIAMETER STEEL BEAM
POINT-ID = 7

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	-7.4[illegible]7228E-06	0.0	0.0	0.0	-5.123954E-06
1.000000E-02	G	0.0	-7.74[illegible]846E-04	0.0	0.0	0.0	-4.108544E-05
1.500000E-02	G	0.0	-1.6[illegible]8050E-03	0.0	0.0	0.0	1.741676E-04
2.000000E-02	G	0.0	5.659762E-04	0.0	0.0	0.0	4.926945E-04
2.500000E-02	G	0.0	9.3[illegible]E-03	0.0	0.0	0.0	6.527687E-04
3.000000E-02	G	0.0	2.01[illegible]E-02	0.0	0.0	0.0	7.317073E-04
3.500000E-02	G	0.0	2.4[illegible]1153E-02	0.0	0.0	0.0	8.609911E-04
4.000000E-02	G	0.0	2.2[illegible]4077E-02	0.0	0.0	0.0	1.105599E-03
4.500000E-02	G	0.0	1.[illegible]5407E-02	0.0	0.0	0.0	1.106694E-03
5.000000E-02	G	0.0	1.2[illegible]5748E-02	0.0	0.0	0.0	1.214109E-03
5.500000E-02	G	0.0	1.4[illegible]7372E-02	0.0	0.0	0.0	1.322810E-03
6.000000E-02	G	0.0	2.23[illegible]515E-02	0.0	0.0	0.0	1.359263E-03
6.500000E-02	G	0.0	2.[illegible]337E-02	0.0	0.0	0.0	1.281507E-03
7.000000E-02	G	0.0	2.8[illegible]E-02	0.0	0.0	0.0	1.440156E-03
7.500000E-02	G	0.0	2.3[illegible]442E-02	0.0	0.0	0.0	1.592650E-03
8.000000E-02	G	0.0	1.8[illegible]E-02	0.0	0.0	0.0	1.637480E-03
8.500000E-02	G	0.0	1.9[illegible]0930E-02	0.0	0.0	0.0	1.776278E-03
9.000000E-02	G	0.0	2.6[illegible]1102E-02	0.0	0.0	0.0	1.959422E-03
9.500000E-02	G	0.0	3.750026E-02	0.0	0.0	0.0	2.058736E-03
1.000000E-01	G	0.0	4.418[illegible]51E-02	0.0	0.0	0.0	2.102103E-03
1.050000E-01	G	0.0	4.31035[illegible]E-02	0.0	0.0	0.0	2.388593E-03
1.100000E-01	G	0.0	3.[illegible]561E-02	0.0	0.0	0.0	2.527416E-03
1.150000E-01	G	0.0	3.[illegible]E-02	0.0	0.0	0.0	2.601037E-03
1.200000E-01	G	0.0	3.9[illegible]E-02	0.0	0.0	0.0	2.663710E-03
1.250000E-01	G	0.0	4.710761E-02	0.0	0.0	0.0	2.804358E-03
1.300000E-01	G	0.0	5.357090E-02	0.0	0.0	0.0	2.694975E-03
1.350000E-01	G	0.0	5.32[illegible]040E-02	0.0	0.0	0.0	2.668176E-03
1.400000E-01	G	0.0	4.549138E-02	0.0	0.0	0.0	2.732295E-03
1.450000E-01	G	0.0	3.718006E-02	0.0	0.0	0.0	2.634608E-03
1.500000E-01	G	0.0	3.424[illegible]E-02	0.0	0.0	0.0	2.561101E-03
1.550000E-01	G	0.0	3.[illegible]17E-02	0.0	0.0	0.0	2.522995E-03
1.600000E-01	G	0.0	4.23323[illegible]E-02	0.0	0.0	0.0	2.511628E-03
1.650000E-01	G	0.0	4.54[illegible]15E-02	0.0	0.0	0.0	2.327115E-03
1.700000E-01	G	0.0	4.183167E-02	0.0	0.0	0.0	2.335462E-03
1.750000E-01	G	0.0	3.380020E-02	0.0	0.0	0.0	2.402841E-03
1.800000E-01	G	0.0	2.94[illegible]E-02	0.0	0.0	0.0	2.431062E-03
1.850000E-01	G	0.0	3.1[illegible]554E-02	0.0	0.0	0.0	2.320652E-03
1.900000E-01	G	0.0	3.[illegible]E-02	0.0	0.0	0.0	2.419500E-03
1.950000E-01	G	0.0	4.5[illegible]70[illegible]E-02	0.0	0.0	0.0	2.391410E-03
2.000000E-01	G	0.0	4.746576E-02	0.0	0.0	0.0	2.314947E-03
2.050000E-01	G	0.0	4.154484E-02	0.0	0.0	0.0	2.320027E-03
2.100000E-01	G	0.0	3.340732E-02	0.0	0.0	0.0	2.387633E-03
2.150000E-01	G	0.0	3.028535E-02	0.0	0.0	0.0	2.241169E-03
2.200000E-01	G	0.0	3.298050E-02	0.0	0.0	0.0	2.047723E-03
2.250000E-01	G	0.0	3.695361E-02	0.0	0.0	0.0	1.985594E-03

DIRECT TRANSIENT ANALYSIS

5 8-INCH DIAMETER STEEL BEAM
POINT-ID = 13

D I S P L A C E M E N T   V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	4.941784E-04	0.0	0.0	0.0	9.896016E-05
1.000000E-02	G	0.0	5.045037E-03	0.0	0.0	0.0	4.195032E-04
1.500000E-02	G	0.0	1.434028E-02	0.0	0.0	0.0	6.345091E-04
2.000000E-02	G	0.0	2.459367E-02	0.0	0.0	0.0	6.481033E-04
2.500000E-02	G	0.0	3.079105E-02	0.0	0.0	0.0	5.497268E-04
3.000000E-02	G	0.0	3.430290E-02	0.0	0.0	0.0	4.732444E-04
3.500000E-02	G	0.0	4.046722E-02	0.0	0.0	0.0	5.082510E-04
4.000000E-02	G	0.0	5.055399E-02	0.0	0.0	0.0	8.625877E-04
4.500000E-02	G	0.0	6.117733E-02	0.0	0.0	0.0	1.571714E-03
5.000000E-02	G	0.0	6.896762E-02	0.0	0.0	0.0	2.077348E-03
5.500000E-02	G	0.0	7.343336E-02	0.0	0.0	0.0	2.142243E-03
6.000000E-02	G	0.0	7.375467E-02	0.0	0.0	0.0	2.055853E-03
6.500000E-02	G	0.0	7.494493E-02	0.0	0.0	0.0	2.103399E-03
7.000000E-02	G	0.0	8.256621E-02	0.0	0.0	0.0	2.281635E-03
7.500000E-02	G	0.0	9.014473E-02	0.0	0.0	0.0	2.743457E-03
8.000000E-02	G	0.0	9.958097E-02	0.0	0.0	0.0	3.346285E-03
8.500000E-02	G	0.0	1.046085E-01	0.0	0.0	0.0	3.545131E-03
9.000000E-02	G	0.0	1.106814E-01	0.0	0.0	0.0	3.290345E-03
9.500000E-02	G	0.0	1.124145E-01	0.0	0.0	0.0	3.050551E-03
1.000000E-01	G	0.0	1.164210E-01	0.0	0.0	0.0	3.022428E-03
1.050000E-01	G	0.0	1.254924E-01	0.0	0.0	0.0	3.152276E-03
1.100000E-01	G	0.0	1.340124E-01	0.0	0.0	0.0	3.556215E-03
1.150000E-01	G	0.0	1.429152E-01	0.0	0.0	0.0	3.923997E-03
1.200000E-01	G	0.0	1.460148E-01	0.0	0.0	0.0	3.857162E-03
1.250000E-01	G	0.0	1.445400E-01	0.0	0.0	0.0	3.492836E-03
1.300000E-01	G	0.0	1.422254E-01	0.0	0.0	0.0	3.348206E-03
1.350000E-01	G	0.0	1.423250E-01	0.0	0.0	0.0	3.473334E-03
1.400000E-01	G	0.0	1.441838E-01	0.0	0.0	0.0	3.775609E-03
1.450000E-01	G	0.0	1.491075E-01	0.0	0.0	0.0	4.217223E-03
1.500000E-01	G	0.0	1.4[illegible]0044E-01	0.0	0.0	0.0	4.483422E-03
1.550000E-01	G	0.0	1.435250E-01	0.0	0.0	0.0	4.247810E-03
1.600000E-01	G	0.0	1.371926E-01	0.0	0.0	0.0	3.845884E-03
1.650000E-01	G	0.0	1.329506E-01	0.0	0.0	0.0	3.769469E-03
1.700000E-01	G	0.0	1.350370E-01	0.0	0.0	0.0	3.894464E-03
1.750000E-01	G	0.0	1.340424E-01	0.0	0.0	0.0	4.100932E-03
1.800000E-01	G	0.0	1.333414E-01	0.0	0.0	0.0	4.235482E-03
1.850000E-01	G	0.0	1.3[illegible]942E-01	0.0	0.0	0.0	4.164812E-03
1.900000E-01	G	0.0	1.312230E-01	0.0	0.0	0.0	3.583753E-03
1.950000E-01	G	0.0	1.263950E-01	0.0	0.0	0.0	3.082313E-03
2.000000E-01	G	0.0	1.233349E-01	0.0	0.0	0.0	2.977722E-03
2.050000E-01	G	0.0	1.242254E-01	0.0	0.0	0.0	3.064653E-03
2.100000E-01	G	0.0	1.2[illegible]14E-01	0.0	0.0	0.0	3.194352E-03
2.150000E-01	G	0.0	1.211755E-01	0.0	0.0	0.0	3.225968E-03
2.200000E-01	G	0.0	1.125193E-01	0.0	0.0	0.0	2.925340E-03
2.250000E-01	G	0.0	1.014812E-01	0.0	0.0	0.0	2.338187E-03

5 9-INCH DIAMETEP STEEL BEAM
POINT-ID = 21

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	-5.936368E-04	0.0	0.0	0.0	-1.027328E-04
1.000000E-02	G	0.0	-1.834662E-03	0.0	0.0	0.0	-6.368902E-04
1.500000E-02	G	0.0	4.142724E-03	0.0	0.0	0.0	-8.026862E-04
2.000000E-02	G	0.0	1.914321E-02	0.0	0.0	0.0	-5.769370E-04
2.500000E-02	G	0.0	4.174868E-02	0.0	0.0	0.0	1.906891E-04
3.000000E-02	G	0.0	6.527489E-02	0.0	0.0	0.0	9.079124E-04
3.500000E-02	G	0.0	8.667680E-02	0.0	0.0	0.0	1.538504E-03
4.000000E-02	G	0.0	9.938472E-02	0.0	0.0	0.0	1.465900E-03
4.500000E-02	G	0.0	1.042560E-01	0.0	0.0	0.0	9.595195E-04
5.000000E-02	G	0.0	1.207076E-01	0.0	0.0	0.0	7.594291E-04
5.500000E-02	G	0.0	1.446041E-01	0.0	0.0	0.0	1.618091E-03
6.000000E-02	G	0.0	1.715677E-01	0.0	0.0	0.0	2.621688E-03
6.500000E-02	G	0.0	1.956421E-01	0.0	0.0	0.0	3.454282E-03
7.000000E-02	G	0.0	2.122067E-01	0.0	0.0	0.0	3.799278E-03
7.500000E-02	G	0.0	2.196208E-01	0.0	0.0	0.0	3.493543E-03
8.000000E-02	G	0.0	2.225160E-01	0.0	0.0	0.0	2.630940E-03
8.500000E-02	G	0.0	2.316677E-01	0.0	0.0	0.0	2.784841E-03
9.000000E-02	G	0.0	2.490700E-01	0.0	0.0	0.0	3.541602E-03
9.500000E-02	G	0.0	2.651743E-01	0.0	0.0	0.0	4.175396E-03
1.000000E-01	G	0.0	2.751631E-01	0.0	0.0	0.0	4.425624E-03
1.050000E-01	G	0.0	2.769622E-01	0.0	0.0	0.0	4.097459E-03
1.100000E-01	G	0.0	2.733374E-01	0.0	0.0	0.0	3.403882E-03
1.150000E-01	G	0.0	2.702239E-01	0.0	0.0	0.0	2.652450E-03
1.200000E-01	G	0.0	2.786159E-01	0.0	0.0	0.0	2.984353E-03
1.250000E-01	G	0.0	2.937720E-01	0.0	0.0	0.0	3.861896E-03
1.300000E-01	G	0.0	3.063671E-01	0.0	0.0	0.0	4.519846E-03
1.350000E-01	G	0.0	3.112592E-01	0.0	0.0	0.0	4.566617E-03
1.400000E-01	G	0.0	3.105674E-01	0.0	0.0	0.0	4.294487E-03
1.450000E-01	G	0.0	3.044675E-01	0.0	0.0	0.0	3.724764E-03
1.500000E-01	G	0.0	3.069891E-01	0.0	0.0	0.0	3.562721E-03
1.550000E-01	G	0.0	3.171951E-01	0.0	0.0	0.0	4.343728E-03
1.600000E-01	G	0.0	3.284799E-01	0.0	0.0	0.0	5.257646E-03
1.650000E-01	G	0.0	3.313758E-01	0.0	0.0	0.0	5.561105E-03
1.700000E-01	G	0.0	3.238291E-01	0.0	0.0	0.0	5.115794E-03
1.750000E-01	G	0.0	3.112675E-01	0.0	0.0	0.0	4.487040E-03
1.800000E-01	G	0.0	2.976861E-01	0.0	0.0	0.0	3.671285E-03
1.850000E-01	G	0.0	2.891024E-01	0.0	0.0	0.0	3.537953E-03
1.900000E-01	G	0.0	2.864208E-01	0.0	0.0	0.0	4.051669E-03
1.950000E-01	G	0.0	2.861336E-01	0.0	0.0	0.0	4.529017E-03
2.000000E-01	G	0.0	2.732550E-01	0.0	0.0	0.0	4.095699E-03
2.050000E-01	G	0.0	2.545083E-01	0.0	0.0	0.0	3.330465E-03
2.100000E-01	G	0.0	2.348764E-01	0.0	0.0	0.0	2.521520E-03
2.150000E-01	G	0.0	2.195022E-01	0.0	0.0	0.0	1.961831E-03
2.200000E-01	G	0.0	2.137800E-01	0.0	0.0	0.0	2.255384E-03
2.250000E-01	G	0.0	2.140248E-01	0.0	0.0	0.0	3.073634E-03

DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETEP STEEL BEAM
POINT-ID = 10

V E L O C I T Y   V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	-7.338346E-02	0.0	0.0	0.0	7.317358E-03
1.000000E-02	G	0.0	3.365204E-01	0.0	0.0	0.0	6.880708E-02
1.500000E-02	G	0.0	1.303052E+00	0.0	0.0	0.0	8.554020E-02
2.000000E-02	G	0.0	1.674224E+00	0.0	0.0	0.0	2.629956E-02
2.500000E-02	G	0.0	1.697362E-00	0.0	0.0	0.0	-7.335791E-02
3.000000E-02	G	0.0	1.383351E+00	0.0	0.0	0.0	-4.333976E-02
3.500000E-02	G	0.0	1.048774E+00	0.0	0.0	0.0	5.444219E-02
4.000000E-02	G	0.0	1.637760E-01	0.0	0.0	0.0	1.246538E-01
4.500000E-02	G	0.0	-2.085577E-01	0.0	0.0	0.0	1.132409E-01
5.000000E-02	G	0.0	4.434466E-01	0.0	0.0	0.0	5.722195E-02
5.500000E-02	G	0.0	8.924326E-01	0.0	0.0	0.0	-2.886746E-02
6.000000E-02	G	0.0	8.252802E-01	0.0	0.0	0.0	-9.238724E-02
6.500000E-02	G	0.0	5.978354E-01	0.0	0.0	0.0	-6.442481E-03
7.000000E-02	G	0.0	4.331020E-01	0.0	0.0	0.0	8.603772E-02
7.500000E-02	G	0.0	-1.083251E-01	0.0	0.0	0.0	1.351918E-01
8.000000E-02	G	0.0	3.152162E-01	0.0	0.0	0.0	7.349619E-02
8.500000E-02	G	0.0	1.138432E+00	0.0	0.0	0.0	1.427087E-02
9.000000E-02	G	0.0	1.694045E+00	0.0	0.0	0.0	-7.459149E-02
9.500000E-02	G	0.0	1.284195E+00	0.0	0.0	0.0	-6.242143E-02
1.000000E-01	G	0.0	1.051255E+00	0.0	0.0	0.0	2.558963E-02
1.050000E-01	G	0.0	6.268446E-01	0.0	0.0	0.0	1.233509E-01
1.100000E-01	G	0.0	1.847011E-01	0.0	0.0	0.0	1.028959E-01
1.150000E-01	G	0.0	4.463128E-01	0.0	0.0	0.0	2.627638E-02
1.200000E-01	G	0.0	1.014536E+00	0.0	0.0	0.0	-3.684979E-02
1.250000E-01	G	0.0	8.362345E-01	0.0	0.0	0.0	-9.303695E-02
1.300000E-01	G	0.0	3.326555E-02	0.0	0.0	0.0	-4.603989E-02
1.350000E-01	G	0.0	-2.926827E-01	0.0	0.0	0.0	5.180306E-02
1.400000E-01	G	0.0	-8.270215E-01	0.0	0.0	0.0	1.198495E-01
1.450000E-01	G	0.0	-9.454428E-01	0.0	0.0	0.0	4.736447E-02
1.500000E-01	G	0.0	-4.518955E-01	0.0	0.0	0.0	-1.651778E-02
1.550000E-01	G	0.0	3.341488E-01	0.0	0.0	0.0	-9.264343E-02
1.600000E-01	G	0.0	3.614414E-02	0.0	0.0	0.0	-8.681769E-02
1.650000E-01	G	0.0	-3.605228E-01	0.0	0.0	0.0	-2.687339E-02
1.700000E-01	G	0.0	-5.149937E-01	0.0	0.0	0.0	8.703000E-02
1.750000E-01	G	0.0	-5.237483E-01	0.0	0.0	0.0	9.626023E-02
1.800000E-01	G	0.0	-3.184375E-01	0.0	0.0	0.0	6.225433E-03
1.850000E-01	G	0.0	4.704453E-01	0.0	0.0	0.0	-7.441455E-02
1.900000E-01	G	0.0	9.244268E-01	0.0	0.0	0.0	-1.078978E-01
1.950000E-01	G	0.0	1.607027E-01	0.0	0.0	0.0	-7.120752E-02
2.000000E-01	G	0.0	-4.344316E-01	0.0	0.0	0.0	8.671731E-03
2.050000E-01	G	0.0	-7.341780E-01	0.0	0.0	0.0	1.047352E-01
2.100000E-01	G	0.0	-8.050968E-01	0.0	0.0	0.0	4.174544E-02
2.150000E-01	G	0.0	-8.115801E-01	0.0	0.0	0.0	-4.961437E-02
2.200000E-01	G	0.0	-2.061749E-01	0.0	0.0	0.0	-1.221610E-01
2.250000E-01	G	0.0	-4.735529E-01	0.0	0.0	0.0	-1.004020E-01

DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM
POINT-ID = 21

V E L O C I T Y   V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	0.0	-3.656672E-01	0.0	0.0	0.0	-7.594716E-02
1.000000E-02	G	0.0	3.259950E-01	0.0	0.0	0.0	-7.696711E-02
1.500000E-02	G	0.0	2.076753E+00	0.0	0.0	0.0	-3.610033E-04
2.000000E-02	G	0.0	3.990758E+00	0.0	0.0	0.0	1.194719E-01
2.500000E-02	G	0.0	4.637270E+00	0.0	0.0	0.0	1.347806E-01
3.000000E-02	G	0.0	4.717392E+00	0.0	0.0	0.0	1.584029E-01
3.500000E-02	G	0.0	3.581502E+00	0.0	0.0	0.0	7.148642E-02
4.000000E-02	G	0.0	1.943564E+00	0.0	0.0	0.0	-7.324105E-02
4.500000E-02	G	0.0	1.047626E+00	0.0	0.0	0.0	-1.077112E-01
5.000000E-02	G	0.0	3.607264E+00	0.0	0.0	0.0	5.642434E-02
5.500000E-02	G	0.0	5.440780E+00	0.0	0.0	0.0	2.207276E-01
6.000000E-02	G	0.0	5.229433E+00	0.0	0.0	0.0	1.902011E-01
6.500000E-02	G	0.0	4.254361E+00	0.0	0.0	0.0	1.395705E-01
7.000000E-02	G	0.0	2.296331E+00	0.0	0.0	0.0	-9.059943E-03
7.500000E-02	G	0.0	7.649671E-01	0.0	0.0	0.0	-1.157298E-01
8.000000E-02	G	0.0	7.930753E-01	0.0	0.0	0.0	-1.178065E-01
8.500000E-02	G	0.0	2.994602E+00	0.0	0.0	0.0	1.169551E-01
9.000000E-02	G	0.0	3.594626E+00	0.0	0.0	0.0	1.588450E-01
9.500000E-02	G	0.0	2.712440E+00	0.0	0.0	0.0	9.292571E-02
1.000000E-01	G	0.0	1.113001E+00	0.0	0.0	0.0	-1.927547E-02
1.050000E-01	G	0.0	-2.775764E-01	0.0	0.0	0.0	-1.047108E-01
1.100000E-01	G	0.0	-1.011277E+00	0.0	0.0	0.0	-1.701949E-01
1.150000E-01	G	0.0	4.118443E-01	0.0	0.0	0.0	-4.794262E-02
1.200000E-01	G	0.0	2.692250E+00	0.0	0.0	0.0	1.523916E-01
1.250000E-01	G	0.0	2.950006E+00	0.0	0.0	0.0	1.565379E-01
1.300000E-01	G	0.0	1.814952E+00	0.0	0.0	0.0	7.500638E-02
1.350000E-01	G	0.0	2.615309E-01	0.0	0.0	0.0	-3.589296E-02
1.400000E-01	G	0.0	-4.875393E-01	0.0	0.0	0.0	-6.791713E-02
1.450000E-01	G	0.0	-7.598986E-01	0.0	0.0	0.0	-1.183362E-01
1.500000E-01	G	0.0	1.156597E+00	0.0	0.0	0.0	6.602895E-02
1.550000E-01	G	0.0	2.460971E+00	0.0	0.0	0.0	1.911037E-01
1.600000E-01	G	0.0	1.711398E+00	0.0	0.0	0.0	1.530261E-01
1.650000E-01	G	0.0	-6.144935E-01	0.0	0.0	0.0	-3.026425E-02
1.700000E-01	G	0.0	-2.081763E+00	0.0	0.0	0.0	-1.023925E-01
1.750000E-01	G	0.0	-2.975568E+00	0.0	0.0	0.0	-1.710929E-01
1.800000E-01	G	0.0	-2.442894E+00	0.0	0.0	0.0	-1.258496E-01
1.850000E-01	G	0.0	-5.372472E-01	0.0	0.0	0.0	6.567607E-02
1.900000E-01	G	0.0	6.750276E-02	0.0	0.0	0.0	1.343450E-01
1.950000E-01	G	0.0	-1.387878E+00	0.0	0.0	0.0	1.969189E-02
2.000000E-01	G	0.0	-3.487721E+00	0.0	0.0	0.0	-1.589409E-01
2.050000E-01	G	0.0	-3.928706E+00	0.0	0.0	0.0	-1.596024E-01
2.100000E-01	G	0.0	-3.761889E+00	0.0	0.0	0.0	-1.596815E-01
2.150000E-01	G	0.0	-2.067549E+00	0.0	0.0	0.0	-1.500645E-02
2.200000E-01	G	0.0	-3.422191E-01	0.0	0.0	0.0	1.204493E-01
2.250000E-01	G	0.0	-2.994927E-02	0.0	0.0	0.0	1.649470E-01

5/8-INCH DIAMETER STEEL BEAM
ELEMENT-ID = 15

F O R C E S I N B A R E L E M E N T S (C B A R)

	BEND-MOMENT-END-A		BEND-MOMENT-END-B		SHEAR			
TIME	PLANE 1	PLANE 2	PLANE 1	PLANE 2	PLANE 1	PLANE 2	FORCE	TORQUE
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	-2.274387E+00	0.0	-6.501846E+00	0.0	8.454918E-01	0.0	0.0	0.0
1.000000E-02	-6.362270E+00	0.0	-1.411845E+01	0.0	1.151235E+00	0.0	0.0	0.0
1.500000E-02	-1.293741E+01	0.0	-1.718950E+01	0.0	8.504186E-01	0.0	0.0	0.0
2.000000E-02	-1.072286E+01	0.0	-1.002651E+01	0.0	-1.392701E-01	0.0	0.0	0.0
2.500000E-02	-4.160202E+00	0.0	-2.893237E+00	0.0	-2.533931E-01	0.0	0.0	0.0
3.000000E-02	4.265016E+00	0.0	3.343029E+00	0.0	1.843975E-01	0.0	0.0	0.0
3.500000E-02	8.882533E-00	0.0	9.039956E+00	0.0	-3.146457E-02	0.0	0.0	0.0
4.000000E-02	5.620599E+00	0.0	5.838714E+00	0.0	-4.362290E-02	0.0	0.0	0.0
4.500000E-02	-5.630208E+00	0.0	-5.146334E+00	0.0	-9.677484E-02	0.0	0.0	0.0
5.000000E-02	-1.096636E+01	0.0	-1.191737E+01	0.0	1.902024E-01	0.0	0.0	0.0
5.500000E-02	-5.844289E+00	0.0	-5.045378E+00	0.0	-1.597822E-01	0.0	0.0	0.0
6.000000E-02	5.369350E+00	0.0	4.463324E+00	0.0	1.812053E-01	0.0	0.0	C.0
6.500000E-02	1.269503E+01	0.0	1.106223E+01	0.0	3.265596E-01	0.0	0.0	0.0
7.000000E-02	1.403400E+01	0.0	1.261201E+01	0.0	2.843969E-01	0.0	0.0	0.0
7.500000E-02	6.521192E+00	0.0	5.898570E+00	0.0	1.245232E-01	0.0	0.0	0.0
8.000000E-02	-4.484129E+00	0.0	-5.836176E+00	0.0	2.704097E-01	0.0	0.0	0.0
8.500000E-02	-6.334169E+00	0.0	-7.757644E+00	0.0	2.846958E-01	0.0	0.0	0.0
9.000000E-02	2.103425E+00	0.0	2.017587E+00	0.0	1.716766E-02	0.0	0.0	0.0
9.500000E-02	1.075694E+01	0.0	9.345995E+00	0.0	2.821888E-01	0.0	0.0	0.0
1.000000E-01	1.262253E+01	0.0	1.118518E+01	0.0	2.874690E-01	0.0	0.0	0.0
1.050000E-01	8.718560E+00	0.0	7.456994E+00	0.0	2.523124E-01	0.0	0.0	0.0
1.100000E-01	-2.411209E+00	0.0	-1.757852E+00	0.0	-1.307712E-01	0.0	0.0	0.0
1.150000E-01	-1.027004E+01	0.0	-1.129170E+01	0.0	2.043324E-01	C.0	0.0	0.0
1.200000E-01	-7.760928E+00	0.0	-7.468344E+00	0.0	-5.450698E-02	0.0	0.0	0.0
1.250000E-01	3.234601E+00	0.0	3.099353E+00	0.0	2.704975E-02	0.0	0.0	0.0
1.300000E-01	1.016533E+01	0.0	9.366500E+00	0.0	1.597660E-01	0.0	0.0	0.0
1.350000E-01	1.029226E+01	0.0	8.477787E+00	0.0	3.628983E-01	0.0	0.0	0.0
1.400000E-01	4.346412E+00	0.0	4.253546E+00	0.0	1.857263E-02	0.0	0.0	0.0
1.450000E-01	-4.097809E+00	0.0	-4.349753E+00	0.0	5.038873E-02	0.0	0.0	0.0
1.500000E-01	-7.502668E+00	0.0	-9.004886E+00	0.0	3.004435E-01	0.0	0.0	0.0
1.550000E-01	5.554404E-01	0.0	-4.577456E-01	0.0	2.026372E-01	0.0	0.0	0.0
1.600000E-01	1.274888E+01	0.0	1.122228E+01	0.0	3.053199E-01	0.0	0.0	0.0
1.650000E-01	1.612775E+01	0.0	1.438357E+01	0.0	3.488357E-01	0.0	0.0	0.0
1.700000E-01	1.227700E+01	0.0	9.724864E+00	0.0	5.104271E-01	0.0	0.0	0.0
1.750000E-01	3.060014E+00	0.0	2.819987E+00	0.0	4.800539E-02	0.0	0.0	0.0
1.800000E-01	-5.272603E+00	0.0	-6.616513E+00	0.0	2.687820E-01	0.0	0.C	0.0
1.850000E-01	-5.761024E+00	0.0	-6.840467E+00	0.0	2.158887E-01	0.0	0.0	0.0
1.900000E-01	4.726237E+00	0.0	3.564965E+00	0.0	2.322544E-01	0.0	0.0	0.0
1.950000E-01	1.254792E+01	0.0	1.255152E+01	0.0	-7.212350E-04	0.0	0.0	0.0
2.000000E-01	1.098893E+01	0.0	9.327771E+00	0.0	3.322325E-01	0.0	0.0	0.0
2.050000E-01	2.063146E+00	0.0	1.521966E+00	0.0	1.062299E-01	0.0	0.0	0.0
2.100000E-01	-6.767043E+00	0.0	-6.143947E+00	0.0	-1.246191E-01	0.0	0.0	0.0
2.150000E-01	-1.089838E+01	0.0	-1.093558E+01	0.0	7.439901E-03	0.0	0.0	0.0
2.200000E-01	-5.587235E+00	0.0	-5.955616E+00	0.0	7.367622E-02	0.0	0.0	0.0
2.250000E-01	6.780815E+00	0.0	6.497311E+00	0.0	5.670095E-02	0.0	0.0	0.0

```
 5/8-INCH DIAMETER STEEL BEAM

                                     X Y - O U T P U T   S U M M A R Y
SUBCASE          1
RESPONSE
DISPLACEMENT     CURVE       21( 4)

THIS CURVE WILL BE PAPER-PLOTTED FRAME     1

CURVE  TITLE =
X-AXIS TITLE =
Y-AXIS TITLE =


THE FOLLOWING INFORMATION IS FOR THE ABOVE DEFINED CURVE ONLY.

WITHIN THE FRAME X-LIMITS        ( X =    0.            TO X =   2.250000E-01 )
                           THE SMALLEST Y-VALUE = -1.894862E-03 AT X =   1.000000E-02
                           THE LARGEST  Y-VALUE =  3.313758E-01 AT X =   1.650000E-01

WITHIN THE X-LIMITS OF ALL DATA ( X =    0.         TO X =   2.250000E-01 )
                           THE SMALLEST Y-VALUE = -1.894862E-03 AT X =   1.000000E-02
                           THE LARGEST  Y-VALUE =  3.313758E-01 AT X =   1.650000E-01

                                     E N D   O F   S U M M A R Y
```

NASTRAN COURSE - - - DEMO. PROB. 9
DIRECT TRANSIENT ANALYSIS

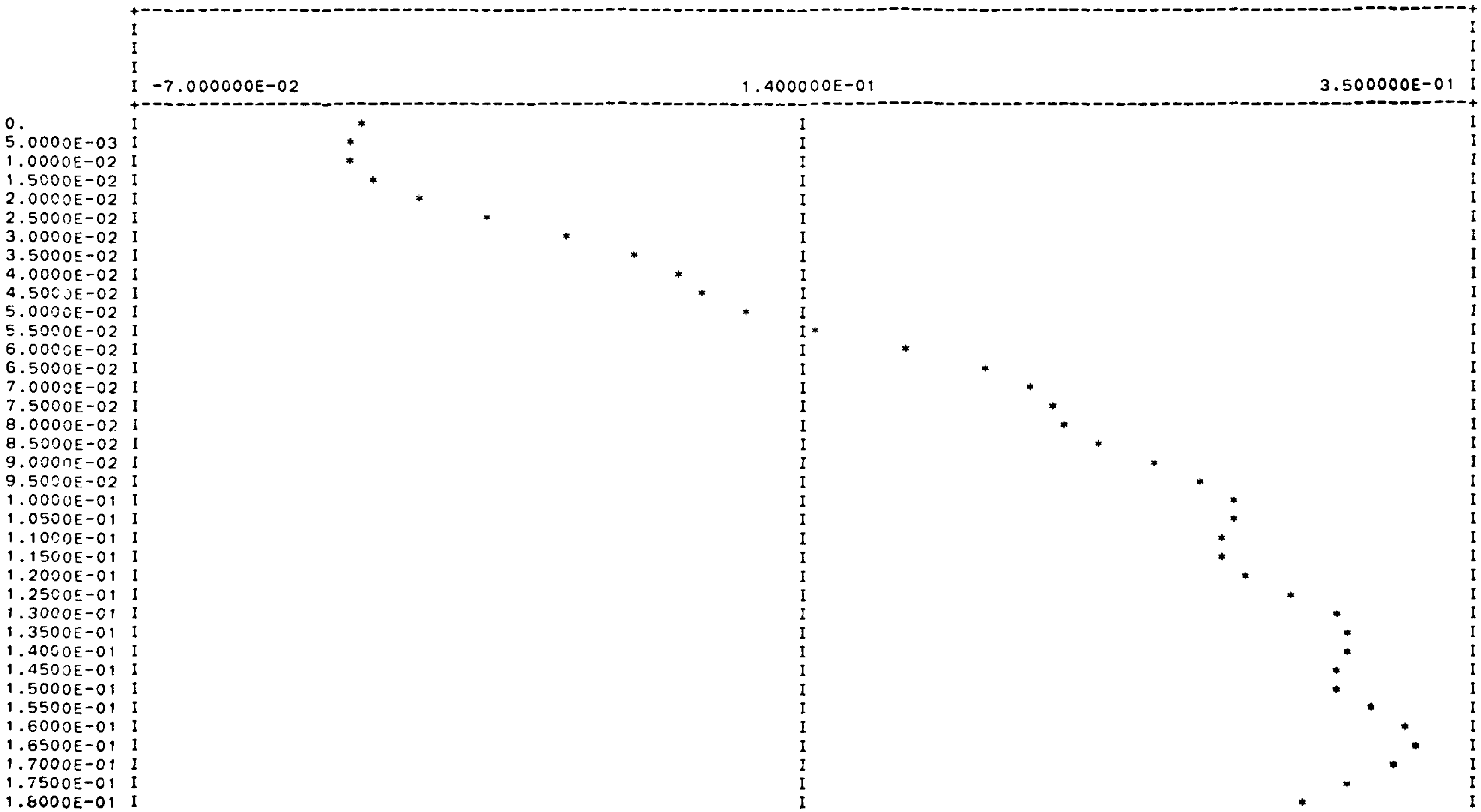
5/8-INCH DIAMETER STEEL BEAM

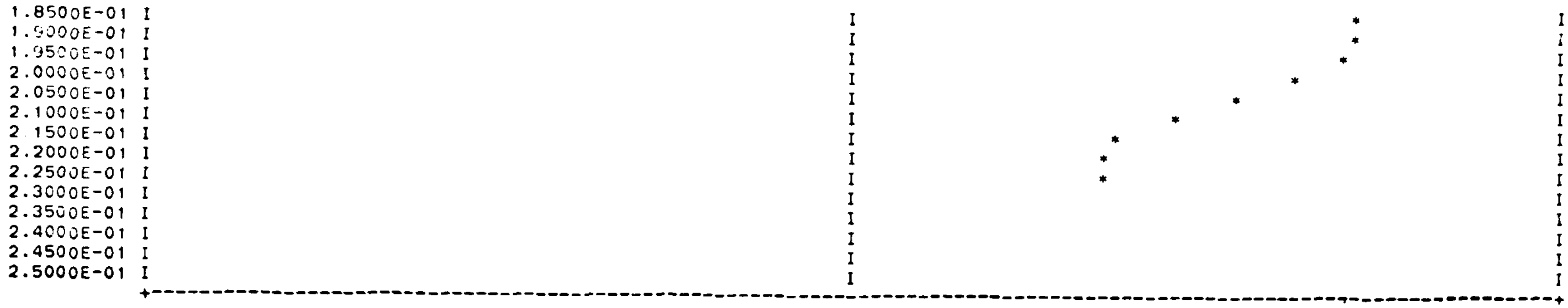
FEBRUARY 9, 1981 NASTRAN 12/15/80 PAGE 34

F R A M E

```
**** **** **** **** **
*  * *  * *  * *  *  *
*  * *  * *  * *  *  *
*  * *  * *  * *  *  *
**** **** **** **** ****
```

X-AXIS TITLE =




1.8500E-01
1.9000E-01
1.9500E-01
2.0000E-01
2.0500E-01
2.1000E-01
2.1500E-01
2.2000E-01
2.2500E-01
2.3000E-01
2.3500E-01
2.4000E-01
2.4500E-01
2.5000E-01

* * * END OF JOB * * *

NASTRAN CONFIG=6,FILES=(NPTP,OPTP,PLT2)

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 9,0
  ALTER 159,159 $   R.F. 9, LEVEL 17
$        RESET THE PARAMETER NCOL IN ORDER TO CONTINUE THE
$                  INTEGRATION AT T=100 MSEC. (NCOL=21)
  PARAM //C,N,MPY/V,N,NCOL/C,N,1/C,N,21 $
  ENDALTER $
$INSERT
RESTART  NASTRAN ,DEMO     , 2/ 9/81,    60038,
          1,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =      5
          2,    REENTER AT DMAP SEQUENCE NUMBER     7
          3,    GPL       ,   FLAGS = 0,    REEL =  1,    FILE =      6
          4,    EQEXIN    ,   FLAGS = 0,    REEL =  1,    FILE =      7
          5,    GPDT      ,   FLAGS = 0,    REEL =  1,    FILE =      8
          6,    BGPDT     ,   FLAGS = 0,    REEL =  1,    FILE =      9
          7,    SIL       ,   FLAGS = 0,    REEL =  1,    FILE =     10
          8,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =     11
          9,    CSTM      ,   FLAGS = 0,    REEL =  0,    FILE =      0
         10,    USET      ,   FLAGS = 0,    REEL =  0,    FILE =      0
         11,    GM        ,   FLAGS = 0,    REEL =  0,    FILE =      0
         12,    GO        ,   FLAGS = 0,    REEL =  0,    FILE =      0
         13,    KAA       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         14,    BAA       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         15,    MAA       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         16,    K4AA      ,   FLAGS = 0,    REEL =  0,    FILE =      0
         17,    PST       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         18,    KFS       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         19,    QP        ,   FLAGS = 0,    REEL =  0,    FILE =      0
         20,    EST       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         21,    ECT       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         22,    PLTSETX   ,   FLAGS = 0,    REEL =  0,    FILE =      0
         23,    PLTPAR    ,   FLAGS = 0,    REEL =  0,    FILE =      0
         24,    GPSETS    ,   FLAGS = 0,    REEL =  0,    FILE =      0
         25,    ELSETS    ,   FLAGS = 0,    REEL =  0,    FILE =      0
         26,    REENTER AT DMAP SEQUENCE NUMBER    10
         27,    ECT       ,   FLAGS = 0,    REEL =  1,    FILE =     12
         28,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =     13
         29,    REENTER AT DMAP SEQUENCE NUMBER    24
         30,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =     14
         31,    REENTER AT DMAP SEQUENCE NUMBER    26
         32,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =     15
         33,    SLT       ,   FLAGS = 0,    REEL =  0,    FILE =      0
         34,    GPTT      ,   FLAGS = 0,    REEL =  0,    FILE =      0
         35,    REENTER AT DMAP SEQUENCE NUMBER    30
         36,    EST       ,   FLAGS = 0,    REEL =  1,    FILE =     16
         37,    GPECT     ,   FLAGS = C,    REEL =  1,    FILE =     17
         38,    XVPS      ,   FLAGS = 0,    REEL =  1,    FILE =     18
         39,    GEI       ,   FLAGS = 0,    REEL =  0,    FILE =      0
```

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
 40.  K4GG    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 41.  GPST    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 42.  MGG     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 43.  BGG     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 44.  KGGX    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 45.  OGPST   ,  FLAGS = 0,   REEL =  0,   FILE =    0
 46.  K4NN    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 47.  K4FF    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 48.  MNN     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 49.  MFF     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 50.  BNN     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 51.  BFF     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 52.  REENTER AT DMAP SEQUENCE NUMBER    38
 53.  KELM    ,  FLAGS = 0,   REEL =  1,   FILE =   19
 54.  KDICT   ,  FLAGS = 0,   REEL =  1,   FILE =   20
 55.  MELM    ,  FLAGS = 0,   REEL =  1,   FILE =   21
 56.  MDICT   ,  FLAGS = 0,   REEL =  1,   FILE =   22
 57.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   23
 58.  BELM    ,  FLAGS = 0,   REEL =  0,   FILE =    0
 59.  BDICT   ,  FLAGS = 0,   REEL =  0,   FILE =    0
 60.  REENTER AT DMAP SEQUENCE NUMBER    41
 61.  KGGX    ,  FLAGS = 0,   REEL =  1,   FILE =   24
 62.  GPST    ,  FLAGS = 0,   REEL =  1,   FILE =   25
 63.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   26
 64.  REENTER AT DMAP SEQUENCE NUMBER    45
 65.  MGG     ,  FLAGS = 0,   REEL =  1,   FILE =   27
 66.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   28
 67.  REENTER AT DMAP SEQUENCE NUMBER    57
 68.  MGG     ,  FLAGS = 0,   REEL =  1,   FILE =   29
 69.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   30
 70.  REENTER AT DMAP SEQUENCE NUMBER    64
 71.  KGGX    ,  FLAGS = 4,   REEL =  1,   FILE =   24
 72.  KGG     ,  FLAGS = 4,   REEL =  1,   FILE =   24
 73.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   31
 74.  REENTER AT DMAP SEQUENCE NUMBER    73
 75.  USET    ,  FLAGS = 0,   REEL =  1,   FILE =   32
 76.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   33
 77.  GMD     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 78.  RG      ,  FLAGS = 0,   REEL =  0,   FILE =    0
 79.  GOD     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 80.  REENTER AT DMAP SEQUENCE NUMBER    82
 81.  KNN     ,  FLAGS = 4,   REEL =  1,   FILE =   24
 82.  MGG     ,  FLAGS = 4,   REEL =  1,   FILE =   29
 83.  MNN     ,  FLAGS = 4,   REEL =  1,   FILE =   29
 84.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   34
 85.  REENTER AT DMAP SEQUENCE NUMBER    90
 86.  XVPS    ,  FLAGS = 0,   REEL =  1,   FILE =   35
 87.  KFF     ,  FLAGS = 0,   REEL =  0,   FILE =    0
 88.  REENTER AT DMAP SEQUENCE NUMBER    93
 89.  KFS     ,  FLAGS = 0,   REEL =  1,   FILE =   36
```

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
 90.  KFF      ,  FLAGS = 0,  REEL =  1,  FILE =   37
 91.  MFF      ,  FLAGS = 0,  REEL =  1,  FILE =   38
 92.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   39
 93.  REENTER AT DMAP SEQUENCE NUMBER    99
 94.  KFF      ,  FLAGS = 4,  REEL =  1,  FILE =   37
 95.  KAA      ,  FLAGS = 4,  REEL =  1,  FILE =   37
 96.  MFF      ,  FLAGS = 4,  REEL =  1,  FILE =   38
 97.  MAA      ,  FLAGS = 4,  REEL =  1,  FILE =   38
 98.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   40
 99.  REENTER AT DMAP SEQUENCE NUMBER   119
100.  USETD    ,  FLAGS = 0,  REEL =  1,  FILE =   41
101.  EQDYN    ,  FLAGS = 0,  REEL =  1,  FILE =   42
102.  DLT      ,  FLAGS = 0,  REEL =  1,  FILE =   43
103.  TRL      ,  FLAGS = 0,  REEL =  1,  FILE =   44
104.  SILD     ,  FLAGS = 0,  REEL =  1,  FILE =   45
105.  GPLD     ,  FLAGS = 0,  REEL =  1,  FILE =   46
106.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   47
107.  TFPOOL   ,  FLAGS = 0,  REEL =  0,  FILE =    0
108.  NLFT     ,  FLAGS = 0,  REEL =  0,  FILE =    0
109.  PNLD     ,  FLAGS = 0,  REEL =  0,  FILE =    0
110.  REENTER AT DMAP SEQUENCE NUMBER   128
111.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   48
112.  ABFL     ,  FLAGS = 0,  REEL =  0,  FILE =    0
113.  KBFL     ,  FLAGS = 0,  REEL =  0,  FILE =    0
114.  REENTER AT DMAP SEQUENCE NUMBER   144
115.  MDD      ,  FLAGS = 4,  REEL =  1,  FILE =   38
116.  KDD      ,  FLAGS = 4,  REEL =  1,  FILE =   37
117.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   49
118.  K2PP     ,  FLAGS = 0,  REEL =  0,  FILE =    0
119.  M2PP     ,  FLAGS = 0,  REEL =  0,  FILE =    0
120.  B2PP     ,  FLAGS = 0,  REEL =  0,  FILE =    0
121.  K2DD     ,  FLAGS = 0,  REEL =  0,  FILE =    0
122.  M2DD     ,  FLAGS = 0,  REEL =  0,  FILE =    0
123.  B2DD     ,  FLAGS = 0,  REEL =  0,  FILE =    0
124.  REENTER AT DMAP SEQUENCE NUMBER   149
125.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   50
126.  BDD      ,  FLAGS = 0,  REEL =  0,  FILE =    0
127.  REENTER AT DMAP SEQUENCE NUMBER   159
128.  CASEXX   ,  FLAGS = 0,  REEL =  1,  FILE =   51
129.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   52
130.  REENTER AT DMAP SEQUENCE NUMBER   163
131.  PPT      ,  FLAGS = 0,  REEL =  1,  FILE =   53
132.  PST      ,  FLAGS = 0,  REEL =  1,  FILE =   54
133.  PDT      ,  FLAGS = 0,  REEL =  1,  FILE =   55
134.  PD       ,  FLAGS = 0,  REEL =  1,  FILE =   56
135.  TOL      ,  FLAGS = 0,  REEL =  1,  FILE =   57
136.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   58
137.  REENTER AT DMAP SEQUENCE NUMBER   165
138.  PDT      ,  FLAGS = 0,  REEL =  1,  FILE =   59
139.  XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =   60
```

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
 140,   REENTER AT DMAP SEQUENCE NUMBER   168
 141,   UDVT     ,  FLAGS = 0,  REEL =  1,  FILE =    61
 142,   XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =    62
 143,   REENTER AT DMAP SEQUENCE NUMBER   171
 144,   XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =    63
 145,   OUDV1    ,  FLAGS = 0,  REEL =  0,  FILE =     0
 146,   OPNL1    ,  FLAGS = 0,  REEL =  0,  FILE =     0
 147,   REENTER AT DMAP SEQUENCE NUMBER   187
 148,   UPV      ,  FLAGS = 0,  REEL =  1,  FILE =    64
 149,   QP       ,  FLAGS = 0,  REEL =  1,  FILE =    65
 150,   XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =    66
 151,   REENTER AT DMAP SEQUENCE NUMBER   190
 152,   OPP2     ,  FLAGS = 0,  REEL =  1,  FILE =    67
 153,   OQP2     ,  FLAGS = 0,  REEL =  1,  FILE =    68
 154,   OUPV2    ,  FLAGS = 0,  REEL =  1,  FILE =    69
 155,   OEF2     ,  FLAGS = 0,  REEL =  1,  FILE =    70
 156,   XVPS     ,  FLAGS = 0,  REEL =  1,  FILE =    71
 157,   OES2     ,  FLAGS = 0,  REEL =  0,  FILE =     0
$ END OF CHECKPOINT DICTIONARY
$SEQUENCE  NO
TIME 10
CEND
```

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

```
                                C A S E    C O N T R O L    D E C K    E C H O
        CARD
        COUNT
          1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 9A
          2      SUBTITLE=DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM
          3      LABEL=RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100
          4      ECHO=BOTH
          5       SPC= 11
          6      DLOAD=92
          7      $     A NEW TSTEP CARD IS SELECTED.
          8      TSTEP=77
          9      $
         10      $    A DUMMY NONLINEAR LOAD (HAVING A VERY SMALL SCALE FACTOR) IS
         11      $    APPLIED TO THE STRUCTURE IN ORDER TO AVOID TEMPORARILY A PROGRAM
         12      $    BUG WHICH STOPS EXECUTION IF THE DLOAD SPECIFIED IS ZERO FOR THE
         13      $    DURATION OF THIS RUN.   A CODE FIX IS AVAILABLE.
         14      $
         15      NONLINEAR = 44
         16      SET 25 = 7,13,21
         17      DISP=25
         18      $
         19      $      XY PLOT ON LINE PRINTER
         20      $
         21      OUTPUT(XYPLOT)
         22      XYPAPLOT DISP RESPONSE/21(T2)
         23      BEGIN BULK
```

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

```
                         I N P U T   B U L K   D A T A   D E C K   E C H O
               .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
               TSTEP   77      90      0.00125 2
               NOLIN2  44      16      2       1.-40   5       2       10      2
               ENDDATA

            TOTAL COUNT=     3

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	DAREA	62	16	2	2.0					
23-	GRDSET							345		
24-	GRID	1		0.0						
25-	GRID	2		5.						
26-	GRID	3		10.						
27-	GRID	4		15.						
28-	GRID	5		20.						
29-	GRID	6		25.						
30-	GRID	7		30.						
31-	GRID	8		35.						
32-	GRID	9		40.						
33-	GRID	10		45.						
34-	GRID	11		50.						
35-	GRID	12		55.						
36-	GRID	13		60.						
37-	GRID	14		65.						
38-	GRID	15		70.						
39-	GRID	16		75.						
40-	GRID	17		80.						
41-	GRID	18		85.						
42-	GRID	19		90.						
43-	GRID	20		95.						
44-	GRID	21		100.						
45-	MAT1	32	30.+6		.3	7.324-4				+STEEL
46-	NOLIN2	44	16	2	1.-40	5	2	10	2	
47-	PBAR	31	32	.30680	7.490-3	7.490-3	1.498-2			+P31
48-	+P31	0.3125	0.	-0.3125	0.	0.	0.3125	0.	0.	+P31A
49-	+P31A	0.75	0.75	0.						
50-	SPC1	11	126	1						

DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

```
                              S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT     .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
   51-     TABLED1 37                                                       +T37
   52-     +T37    -1.     0.      0.      0.      0.005   1.      0.015   1.0     +T*
   53-     +T*     0.020   0.      1.0     0.      ENDT
   54-     TLOAD1  92      62                      37
   55-     TSTEP   71      180     .00125  4
   56-     TSTEP   77      90      .00125  2
           ENDDATA
```

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

LIST OF MODIFIED CARDS

MASK WORD	BIT POSITION	CARD NAME	PACKED BIT POSITION
1			
2			
3			
4			
5			
	4	NOLIN2	61
	18	TSTEP	61
6			
7			
8			
9			
10			
11			
12			
13			
	10	LOOP$	22
	16	TSTEP$	62
	17	POUT$	19
	26	NLFORCE$	
	27	XYOUT$	20

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

*INDICATES INSTRUCTIONS TO BE EXECUTED FOR MODIFIED RESTART

THE FOLLOWING FILES WERE USED FROM OLD PROBLEM TAPE TO INITIATE RESTART

FILE NAME	REEL NO.	FILE NO.
CSTM	(PURGED)	
PLTPAR	(PURGED)	
GPSETS	(PURGED)	
ELSETS	(PURGED)	
GMD	(PURGED)	
GOD	(PURGED)	
BDD	(PURGED)	
GPL	1	6
EQEXIN	1	7
BGPDT	1	9
SIL	1	10
EST	1	16
GPECT	1	17
MGG	1	29
MNN	1	29
USET	1	32
KFS	1	36
KAA	1	37
KFF	1	37
KDD	1	37
MAA	1	38
MFF	1	38
MDD	1	38
TOL	1	57
UDVT	1	61
XVPS	1	71

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

```
MPYAD--NULL MATRIX PRODUCT
MPYAD--NULL MATRIX PRODUCT
MPYAD--NULL MATRIX PRODUCT
MPYAD--NULL MATRIX PRODUCT

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 ( N =    60 )
            TIME ESTIMATE=      1          C AVG =     4         PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
          ADDITIONAL CORE= -15639          C MAX =     5          PCMAX =     0      PC GROUPS =     0   PREFACE LOOPS =      1

                              METHOD 1 T ,NBR PASSES =   1,EST. TIME =      .6
```

DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100
POINT-ID = 7

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
1.000000E-01	G	0.0	4.418851E-02	0.0	0.0	0.0	2.102103E-03
1.025000E-01	G	0.0	4.458309E-02	0.0	0.0	0.0	2.233533E-03
1.050000E-01	G	0.0	4.314075E-02	0.0	0.0	0.0	2.384328E-03
1.075000E-01	G	0.0	4.078328E-02	0.0	0.0	0.0	2.476372E-03
1.100000E-01	G	0.0	3.842046E-02	0.0	0.0	0.0	2.528069E-03
1.125000E-01	G	0.0	3.691813E-02	0.0	0.0	0.0	2.565344E-03
1.150000E-01	G	0.0	3.685926E-02	0.0	0.0	0.0	2.600511E-03
1.175000E-01	G	0.0	3.762574E-02	0.0	0.0	0.0	2.629706E-03
1.200000E-01	G	0.0	3.982770E-02	0.0	0.0	0.0	2.665844E-03
1.225000E-01	G	0.0	4.300977E-02	0.0	0.0	0.0	2.741640E-03
1.250000E-01	G	0.0	4.706413E-02	0.0	0.0	0.0	2.799951E-03
1.275000E-01	G	0.0	5.064439E-02	0.0	0.0	0.0	2.776776E-03
1.300000E-01	G	0.0	5.355498E-02	0.0	0.0	0.0	2.697530E-03
1.325000E-01	G	0.0	5.454743E-02	0.0	0.0	0.0	2.641002E-03
1.350000E-01	G	0.0	5.328346E-02	0.0	0.0	0.0	2.663457E-03
1.375000E-01	G	0.0	5.002194E-02	0.0	0.0	0.0	2.711345E-03
1.400000E-01	G	0.0	4.551401E-02	0.0	0.0	0.0	2.733570E-03
1.425000E-01	G	0.0	4.085307E-02	0.0	0.0	0.0	2.726410E-03
1.450000E-01	G	0.0	3.717626E-02	0.0	0.0	0.0	2.695761E-03
1.475000E-01	G	0.0	3.493604E-02	0.0	0.0	0.0	2.646805E-03
1.500000E-01	G	0.0	3.423833E-02	0.0	0.0	0.0	2.564422E-03
1.525000E-01	G	0.0	3.434149E-02	0.0	0.0	0.0	2.508031E-03
1.550000E-01	G	0.0	3.666461E-02	0.0	0.0	0.0	2.519357E-03
1.575000E-01	G	0.0	3.958219E-02	0.0	0.0	0.0	2.543032E-03
1.600000E-01	G	0.0	4.233832E-02	0.0	0.0	0.0	2.511360E-03
1.625000E-01	G	0.0	4.454454E-02	0.0	0.0	0.0	2.413247E-03
1.650000E-01	G	0.0	4.543925E-02	0.0	0.0	0.0	2.329826E-03
1.675000E-01	G	0.0	4.452563E-02	0.0	0.0	0.0	2.313394E-03
1.700000E-01	G	0.0	4.165116E-02	0.0	0.0	0.0	2.336343E-03
1.725000E-01	G	0.0	3.789070E-02	0.0	0.0	0.0	2.372577E-03
1.750000E-01	G	0.0	3.384274E-02	0.0	0.0	0.0	2.404708E-03
1.775000E-01	G	0.0	3.093724E-02	0.0	0.0	0.0	2.436991E-03
1.800000E-01	G	0.0	2.950533E-02	0.0	0.0	0.0	2.429243E-03
1.825000E-01	G	0.0	2.947417E-02	0.0	0.0	0.0	2.364653E-03
1.850000E-01	G	0.0	3.200337E-02	0.0	0.0	0.0	2.322064E-03
1.875000E-01	G	0.0	3.526711E-02	0.0	0.0	0.0	2.347498E-03
1.900000E-01	G	0.0	3.906752E-02	0.0	0.0	0.0	2.415150E-03
1.925000E-01	G	0.0	4.278430E-02	0.0	0.0	0.0	2.440331E-03
1.950000E-01	G	0.0	4.583727E-02	0.0	0.0	0.0	2.395796E-03
1.975000E-01	G	0.0	4.751683E-02	0.0	0.0	0.0	2.342285E-03
2.000000E-01	G	0.0	4.744470E-02	0.0	0.0	0.0	2.314331E-03
2.025000E-01	G	0.0	4.534537E-02	0.0	0.0	0.0	2.312319E-03
2.050000E-01	G	0.0	4.157524E-02	0.0	0.0	0.0	2.319648E-03
2.075000E-01	G	0.0	3.722629E-02	0.0	0.0	0.0	2.344116E-03
2.100000E-01	G	0.0	3.342196E-02	0.0	0.0	0.0	2.381449E-03
2.125000E-01	G	0.0	3.102554E-02	0.0	0.0	0.0	2.352501E-03

DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100
POINT-ID = 13

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
1.000000E-01	G	0.0	1.169210E-01	0.0	0.0	0.0	3.022428E-03
1.025000E-01	G	0.0	1.207063E-01	0.0	0.0	0.0	3.060629E-03
1.050000E-01	G	0.0	1.254894E-01	0.0	0.0	0.0	3.153209E-03
1.075000E-01	G	0.0	1.309295E-01	0.0	0.0	0.0	3.323085E-03
1.100000E-01	G	0.0	1.359661E-01	0.0	0.0	0.0	3.552666E-03
1.125000E-01	G	0.0	1.399391E-01	0.0	0.0	0.0	3.770781E-03
1.150000E-01	G	0.0	1.429118E-01	0.0	0.0	0.0	3.923440E-03
1.175000E-01	G	0.0	1.449128E-01	0.0	0.0	0.0	3.960303E-03
1.200000E-01	G	0.0	1.459718E-01	0.0	0.0	0.0	3.860064E-03
1.225000E-01	G	0.0	1.457421E-01	0.0	0.0	0.0	3.680124E-03
1.250000E-01	G	0.0	1.445918E-01	0.0	0.0	0.0	3.495093E-03
1.275000E-01	G	0.0	1.432265E-01	0.0	0.0	0.0	3.372392E-03
1.300000E-01	G	0.0	1.422194E-01	0.0	0.0	0.0	3.346846E-03
1.325000E-01	G	0.0	1.418844E-01	0.0	0.0	0.0	3.390132E-03
1.350000E-01	G	0.0	1.423376E-01	0.0	0.0	0.0	3.473281E-03
1.375000E-01	G	0.0	1.438930E-01	0.0	0.0	0.0	3.596039E-03
1.400000E-01	G	0.0	1.461306E-01	0.0	0.0	0.0	3.775229E-03
1.425000E-01	G	0.0	1.481130E-01	0.0	0.0	0.0	3.994660E-03
1.450000E-01	G	0.0	1.491023E-01	0.0	0.0	0.0	4.217442E-03
1.475000E-01	G	0.0	1.489413E-01	0.0	0.0	0.0	4.404811E-03
1.500000E-01	G	0.0	1.479967E-01	0.0	0.0	0.0	4.482603E-03
1.525000E-01	G	0.0	1.462370E-01	0.0	0.0	0.0	4.422623E-03
1.550000E-01	G	0.0	1.435545E-01	0.0	0.0	0.0	4.249507E-03
1.575000E-01	G	0.0	1.403584E-01	0.0	0.0	0.0	4.025154E-03
1.600000E-01	G	0.0	1.372250E-01	0.0	0.0	0.0	3.846679E-03
1.625000E-01	G	0.0	1.347234E-01	0.0	0.0	0.0	3.765552E-03
1.650000E-01	G	0.0	1.329743E-01	0.0	0.0	0.0	3.767095E-03
1.675000E-01	G	0.0	1.322722E-01	0.0	0.0	0.0	3.816428E-03
1.700000E-01	G	0.0	1.330274E-01	0.0	0.0	0.0	3.895104E-03
1.725000E-01	G	0.0	1.348718E-01	0.0	0.0	0.0	3.996281E-03
1.750000E-01	G	0.0	1.369155E-01	0.0	0.0	0.0	4.101136E-03
1.775000E-01	G	0.0	1.381712E-01	0.0	0.0	0.0	4.210208E-03
1.800000E-01	G	0.0	1.384136E-01	0.0	0.0	0.0	4.292138E-03
1.825000E-01	G	0.0	1.378577E-01	0.0	0.0	0.0	4.288621E-03
1.850000E-01	G	0.0	1.364011E-01	0.0	0.0	0.0	4.168566E-03
1.875000E-01	G	0.0	1.341193E-01	0.0	0.0	0.0	3.916398E-03
1.900000E-01	G	0.0	1.313194E-01	0.0	0.0	0.0	3.587361E-03
1.925000E-01	G	0.0	1.286203E-01	0.0	0.0	0.0	3.286173E-03
1.950000E-01	G	0.0	1.263326E-01	0.0	0.0	0.0	3.081908E-03
1.975000E-01	G	0.0	1.244745E-01	0.0	0.0	0.0	2.987215E-03
2.000000E-01	G	0.0	1.233367E-01	0.0	0.0	0.0	2.977556E-03
2.025000E-01	G	0.0	1.232839E-01	0.0	0.0	0.0	3.023474E-03
2.050000E-01	G	0.0	1.241762E-01	0.0	0.0	0.0	3.083379E-03
2.075000E-01	G	0.0	1.251212E-01	0.0	0.0	0.0	3.137055E-03
2.100000E-01	G	0.0	1.250761E-01	0.0	0.0	0.0	3.193417E-03
2.125000E-01	G	0.0	1.237982E-01	0.0	0.0	0.0	3.228791E-03

DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100
POINT-ID = 21

D I S P L A C E M E N T   V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
1.000000E-01	G	0.0	2.751631E-01	0.0	0.0	0.0	4.425624E-03
1.025000E-01	G	0.0	2.769418E-01	0.0	0.0	0.0	4.314328E-03
1.050000E-01	G	0.0	2.779683E-01	0.0	0.0	0.0	4.096072E-03
1.075000E-01	G	0.0	2.756350E-01	0.0	0.0	0.0	3.789808E-03
1.100000E-01	G	0.0	2.735699E-01	0.0	0.0	0.0	3.401772E-03
1.125000E-01	G	0.0	2.709460E-01	0.0	0.0	0.0	2.957502E-03
1.150000E-01	G	0.0	2.703120E-01	0.0	0.0	0.0	2.662763E-03
1.175000E-01	G	0.0	2.720533E-01	0.0	0.0	0.0	2.690777E-03
1.200000E-01	G	0.0	2.765980E-01	0.0	0.0	0.0	2.982776E-03
1.225000E-01	G	0.0	2.800640E-01	0.0	0.0	0.0	3.427019E-03
1.250000E-01	G	0.0	2.937796E-01	0.0	0.0	0.0	3.863571E-03
1.275000E-01	G	0.0	3.007721E-01	0.0	0.0	0.0	4.237029E-03
1.300000E-01	G	0.0	3.063535E-01	0.0	0.0	0.0	4.515666E-03
1.325000E-01	G	0.0	3.094135E-01	0.0	0.0	0.0	4.615108E-03
1.350000E-01	G	0.0	3.112024E-01	0.0	0.0	0.0	4.569069E-03
1.375000E-01	G	0.0	3.113734E-01	0.0	0.0	0.0	4.443761E-03
1.400000E-01	G	0.0	3.105556E-01	0.0	0.0	0.0	4.291335E-03
1.425000E-01	G	0.0	3.087349E-01	0.0	0.0	0.0	4.056893E-03
1.450000E-01	G	0.0	3.065490E-01	0.0	0.0	0.0	3.736898E-03
1.475000E-01	G	0.0	3.055116E-01	0.0	0.0	0.0	3.529595E-03
1.500000E-01	G	0.0	3.065714E-01	0.0	0.0	0.0	3.561678E-03
1.525000E-01	G	0.0	3.111768E-01	0.0	0.0	0.0	3.865260E-03
1.550000E-01	G	0.0	3.171160E-01	0.0	0.0	0.0	4.335634E-03
1.575000E-01	G	0.0	3.232217E-01	0.0	0.0	0.0	4.813774E-03
1.600000E-01	G	0.0	3.284059E-01	0.0	0.0	0.0	5.250432E-03
1.625000E-01	G	0.0	3.313822E-01	0.0	0.0	0.0	5.525122E-03
1.650000E-01	G	0.0	3.313571E-01	0.0	0.0	0.0	5.560937E-03
1.675000E-01	G	0.0	3.255039E-01	0.0	0.0	0.0	5.385351E-03
1.700000E-01	G	0.0	3.214324E-01	0.0	0.0	0.0	5.120000E-03
1.725000E-01	G	0.0	3.161223E-01	0.0	0.0	0.0	4.848169E-03
1.750000E-01	G	0.0	3.112462E-01	0.0	0.0	0.0	4.486613E-03
1.775000E-01	G	0.0	3.036891E-01	0.0	0.0	0.0	4.055552E-03
1.800000E-01	G	0.0	2.966962E-01	0.0	0.0	0.0	3.673001E-03
1.825000E-01	G	0.0	2.915915E-01	0.0	0.0	0.0	3.470197E-03
1.850000E-01	G	0.0	2.880342E-01	0.0	0.0	0.0	3.530406E-03
1.875000E-01	G	0.0	2.862004E-01	0.0	0.0	0.0	3.749459E-03
1.900000E-01	G	0.0	2.863876E-01	0.0	0.0	0.0	4.051469E-03
1.925000E-01	G	0.0	2.881754E-01	0.0	0.0	0.0	4.363306E-03
1.950000E-01	G	0.0	2.851038E-01	0.0	0.0	0.0	4.527522E-03
1.975000E-01	G	0.0	2.811231E-01	0.0	0.0	0.0	4.441181E-03
2.000000E-01	G	0.0	2.733344E-01	0.0	0.0	0.0	4.107271E-03
2.025000E-01	G	0.0	2.641417E-01	0.0	0.0	0.0	3.708476E-03
2.050000E-01	G	0.0	2.544916E-01	0.0	0.0	0.0	3.324673E-03
2.075000E-01	G	0.0	2.446113E-01	0.0	0.0	0.0	2.924285E-03
2.100000E-01	G	0.0	2.349069E-01	0.0	0.0	0.0	2.522141E-03
2.125000E-01	G	0.0	2.261208E-01	0.0	0.0	0.0	2.157744E-03

```
DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

                                 X Y - O U T P U T   S U M M A R Y

 SUBCASE          1
 RESPONSE
 DISPLACEMENT     CURVE       21( 4)

 THIS CURVE WILL BE PAPER-PLOTTED FRAME     1

 CURVE  TITLE =
 X-AXIS TITLE =
 Y-AXIS TITLE =


 THE FOLLOWING INFORMATION IS FOR THE ABOVE DEFINED CURVE ONLY.

 WITHIN THE FRAME X-LIMITS       ( X =   1.000000E-01 TO X =   2.125000E-01 )

                        THE SMALLEST Y-VALUE =   2.261208E-01 AT X =   2.125000E-01

                        THE LARGEST  Y-VALUE =   3.313882E-01 AT X =   1.625000E-01


 WITHIN THE X-LIMITS OF ALL DATA ( X =   1.000000E-01 TO X =   2.125000E-01 )

                        THE SMALLEST Y-VALUE =   2.261208E-01 AT X =   2.125000E-01

                        THE LARGEST  Y-VALUE =   3.313882E-01 AT X =   1.625000E-01

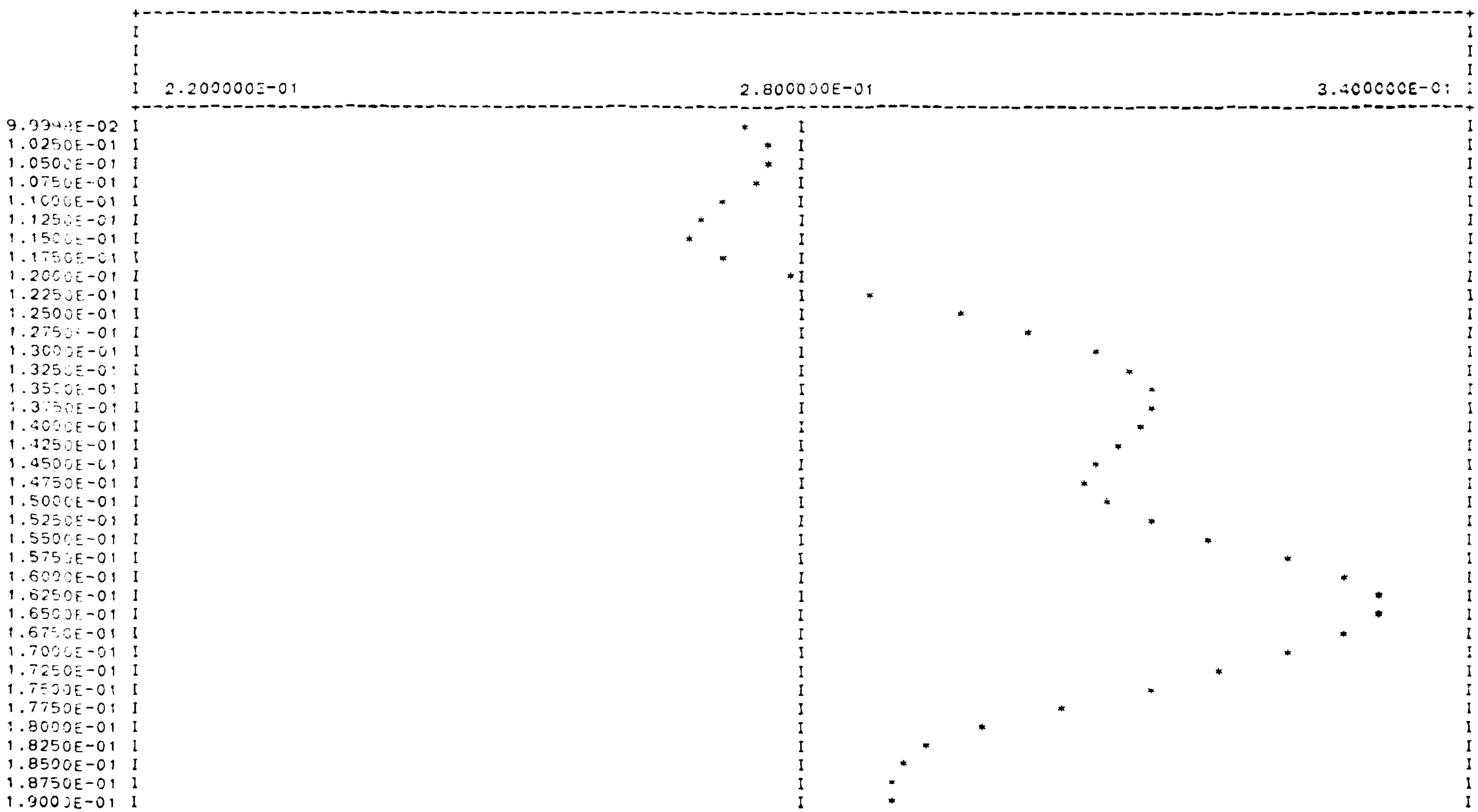
                                  E N D   O F   S U M M A R Y
```

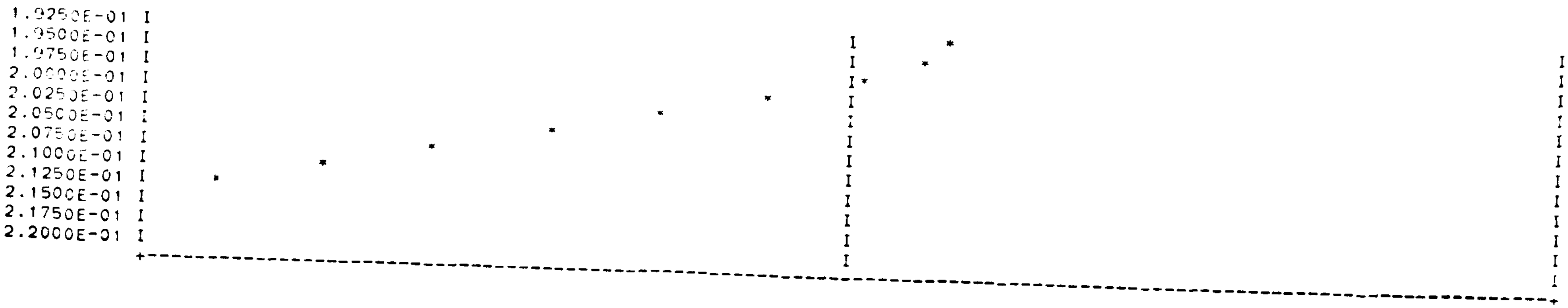
DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

F R A M E

X-AXIS TITLE =




1.9250E-01
1.9500E-01
1.9750E-01
2.0000E-01
2.0250E-01
2.0500E-01
2.0750E-01
2.1000E-01
2.1250E-01
2.1500E-01
2.1750E-01
2.2000E-01

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 10,0
TIME 10
CEND
```

```
MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING.  GIV(REAL), INV(COMPLEX)

                        C A S E   C O N T R O L   D E C K   E C H O
      CARD
      COUNT
        1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 10
        2      SUBTITLE=MODAL COMPLEX EIGENVALUE ANALYSIS
        3      LABEL=CANTILEVER BEAM WITH VISCOUS DAMPING.  GIV(REAL), INV(COMPLEX)
        4       SPC= 11
        5      METHOD=42
        6         B2PP =     DAMPER
        7      CVETHOD=51
        8      SET 4 = 1,3,5,7,9,11,13,15,17,19,21
        9      DISP(PHASE) = 4
       10      BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

S O R T E D   B U L K   D A T A   E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	DMIG	DAMPER	0	6	1	1				
23-	DMIG	DAMPER	13	2		13	2	.25		
24-	EIGC	51	INV	MAX			1.-6			+EIGC51
25-	+EIGC51	-50.	10.	-50.	300.	50.	4	3		
26-	EIGR	42	GIV	0.0	800.	15	10	0	1.-5	+EIGR42
27-	+EIGR42	MAX								
28-	GRDSET							345		
29-	GRID	1		0.0						
30-	GRID	2		5.						
31-	GRID	3		10.						
32-	GRID	4		15.						
33-	GRID	5		20.						
34-	GRID	6		25.						
35-	GRID	7		30.						
36-	GRID	8		35.						
37-	GRID	9		40.						
38-	GRID	10		45.						
39-	GRID	11		50.						
40-	GRID	12		55.						
41-	GRID	13		60.						
42-	GRID	14		65.						
43-	GRID	15		70.						
44-	GRID	16		75.						
45-	GRID	17		80.						
46-	GRID	18		85.						
47-	GRID	19		90.						
48-	GRID	20		95.						
49-	GRID	21		100.						
50-	MAT1	32	30.+6		.3	7.324-4				+STEEL

```
NASTRAN COURSE  - - -  DEMO. PROB. 10
MODAL COMPLEX EIGENVALUE ANALYSIS                                       JANUARY   3, 1980   NASTRAN  8/15/79    PAGE     4

CANTILEVER BEAM WITH VISCOUS DAMPING.  GIV(REAL), INV(COMPLEX)

                                        S O R T E D   B U L K   D A T A   E C H O
         CARD
         COUNT       .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
           51-      OMIT1   6       2       THRU    21
           52-      PARAM   LMODES  8
           53-      PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
           54-      +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
           55-      +P31A   0.75    0.75    0.
           56-      SPC1    11      126     1
                    ENDDATA


     **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KOO      ( N =    20 )
          TIME ESTIMATE=       1               C AVG =       1          PC AVG =      0   SPILL GROUPS =     0                 S AVG =      1
        ADDITIONAL CORE= -28503                C MAX =       2          PCMAX  =      0      PC GROUPS =     0   PREFACE LOOPS =      1
                                                 METHOD 1 T ,NBR PASSES =    1,EST. TIME =       .2
                                                 MPYAD--NULL MATRIX PRODUCT
                                                 MPYAD--NULL MATRIX PRODUCT
                                                 MPYAD--NULL MATRIX PRODUCT


*** USER INFORMATION MESSAGE 2016, GIVENS TIME ESTIMATE IS        6 SECONDS.
                                  PROBLEM SIZE IS       40, SPILL WILL OCCUR FOR THIS CORE AT A PROBLEM SIZE OF       248 .
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK MAA      ( N =    40 )
          TIME ESTIMATE=       1               C AVG =       1          PC AVG =      0   SPILL GROUPS =     0                 S AVG =      1
        ADDITIONAL CORE= -23739                C MAX =       1          PCMAX  =      0      PC GROUPS =     0   PREFACE LOOPS =      1
                                                 METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .3
                                                 METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .3
                                                 METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .1
                                                 METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .1
                                                 METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .1
```

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (GIVENS METHOD)

```
NUMBER OF EIGENVALUES EXTRACTED . . . . . . . .        40
NUMBER OF EIGENVECTORS COMPUTED . . . . . . . .        10
NUMBER OF EIGENVALUE CONVERGENCE FAILURES . .           0
NUMBER OF EIGENVECTOR CONVERGENCE FAILURES. .           0

REASON FOR TERMINATION. . . . . . . . . . . . .         1

LARGEST OFF-DIAGONAL MODAL MASS TERM. . . . .   1.53E-14

          MODE PAIR. . . . . . . . . . . . . .           8
                                        . . .           7
NUMBER OF OFF-DIAGONAL MODAL MASS
     TERMS FAILING CRITERION. . . . . . . . .           0
```

MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

R E A L E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	40	1.233355E+02	1.110565E+01	1.767519E+00	5.628510E-03	6.941951E-01
2	39	4.815432E+03	6.93[illegible]31E+01	1.104429E+01	5.6[illegible]5221E-03	2.742495E+01
3	38	3.754747E+04	1.9[illegible]7[illegible]7E+02	3.083972E+01	5.808538E-03	2.180959E+02
4	37	1.433456E+05	3.7[illegible]10[illegible]E+02	6.025770E+01	5.[illegible]8002E-03	8.583633E+02
5	36	3.89[illegible]342E+05	6.2[illegible]E+02	9.9307[illegible]E+01	6.248952E-03	2.432931E+03
6	35	8.6220[illegible]4E+05	9.2[illegible]E+02	1.4786[illegible]3E+02	6.618356E-03	5.713022E+03
7	34	1.6721[illegible]E+06	1.2[illegible]E+03	2.0580[illegible]E+02	7.[illegible]35542E-03	1.193199E+04
8	33	2.9411[illegible]E+06	1.714[illegible]E+03	2.7294[illegible]3E+02	7.857788E-03	2.311128E+04
9	32	4.80[illegible]41E+06	2.1[illegible]E+03	3.4904[illegible]E+02	8.869421E-03	4.266050E+04
10	31	7.427261E+06	2.72[illegible]304E+03	4.3374[illegible]E+02	1.029699E-02	7.647863E+04
11	20	1.010158E+07	3.1[illegible]E+03	5.05[illegible]419E+02	0.0	0.0
12	30	1.094204E+07	3.3[illegible]02[illegible]E+03	5.2648[illegible]7E+02	0.0	0.0
13	29	1.54[illegible]129E+07	3.[illegible]E+03	6.2641[illegible]E+02	0.0	0.0
14	28	2.[illegible]505E+07	4.[illegible]E+03	7.3220[illegible]E+02	0.0	0.0
15	27	2.79777[illegible]E+07	5.2[illegible]01E+03	8.41834[illegible]E+02	0.0	0.0
16	26	3.581116E+07	5.9842[illegible]E+03	9.524221E+02	0.0	0.0
17	25	4.435794E+07	6.660175E+03	1.060000E+03	0.0	0.0
18	24	5.307959E+07	7.285574E+03	1.159535E+03	0.0	0.0
19	23	6.121702E+07	7.824131E+03	1.245249E+03	0.0	0.0
20	22	6.7[illegible]7E+07	8.2[illegible]470E+03	1.311352E+03	0.0	0.0
21	21	7.227353E+07	8.501[illegible]E+03	1.353037E+03	0.0	0.0
22	19	[illegible].0540[illegible]5E+07	9.515[illegible]E+03	1.514407E+03	0.0	0.0
23	18	2.4943[illegible]0E+08	1.57[illegible]E+04	2.513636E+03	0.0	0.0
24	17	4.82[illegible]31E+08	2.197[illegible]E+04	3.497357E+03	0.0	0.0
25	16	7.851252E+08	2.80200[illegible]E+04	4.459535E+03	0.0	0.0
26	15	1.148723E+09	3.38[illegible]282E+04	5.394209E+03	0.0	0.0
27	14	1.564723E+09	3.95565[illegible]E+04	6.295626E+03	0.0	0.0
28	13	2.022[illegible]3E+09	4.49[illegible]E+04	7.15822[illegible]E+03	0.0	0.0
29	12	2.511921E+09	5.0119[illegible]E+04	7.9766[illegible]6E+03	0.0	0.0
30	11	3.01[illegible]7[illegible]5E+09	5.49[illegible]2[illegible]7E+04	8.745988E+03	0.0	0.0
31	10	3.534000E+09	5.[illegible]47[illegible]E+04	9.461357E+03	0.0	0.0
32	9	4.041874E+09	6.35757[illegible]E+04	1.011839E+04	0.0	0.0
33	8	4.530912E+09	6.73120[illegible]E+04	1.071305E+04	0.0	0.0
34	7	4.989072E+09	7.063337E+04	1.124165E+04	0.0	0.0
35	6	5.405073E+09	7.351920E+04	1.170094E+04	0.0	0.0
36	5	5.768871E+09	7.53[illegible]176E+04	1.208810E+04	0.0	0.0
37	4	6.070913E+09	7.7916[illegible]E+04	1.240073E+04	0.0	0.0
38	3	6.304357E+09	7.93[illegible]E+04	1.263690E+04	0.0	0.0
39	2	6.463255E+09	8.039437E+04	1.279516E+04	0.0	0.0
40	1	6.543694E+09	8.089310E+04	1.287454E+04	0.0	0.0

MPYAD--NULL MATRIX PRODUCT
MPYAD--NULL MATRIX PRODUCT
MPYAD--NULL MATRIX PRODUCT
METHOD 1 NT,NBR PASSES = 1,EST. TIME = .1
METHOD 3 T ,NBR PASSES = 1,EST. TIME = .0

*** USER INFORMATION MESSAGE 3028, B = 8 BBAR = 7
C = 0 CBAR = 0

R =   7

*** USER INFORMATION MESSAGE 3027, UNSYMMETRIC COMPLEX DECOMPOSITION TIME ESTIMATE IS   0 SECONDS.

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

C O M P L E X   E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

NUMBER OF EIGENVALUES EXTRACTED 3

NUMBER OF STARTING POINTS USED 3

NUMBER OF STARTING POINT OR SHIFT POINT MOVES . . 0

TOTAL NUMBER OF TRIANGULAR DECOMPOSITIONS 5

TOTAL NUMBER OF VECTOR ITERATIONS 55

REASON FOR TERMINATION 6

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

C O M P L E X   E I G E N V A L U E   S U M M A R Y

ROOT NO.	EXTRACTION ORDER	EIGENVALUE (REAL)	EIGENVALUE (IMAG)	FREQUENCY (CYCLES)	DAMPING COEFFICIENT
1	1	-4.887301E+00	1.019557E+01	1.622675E+00	9.587109E-01
2	2	-7.700504E+00	6.805570E+01	1.083140E+01	2.263000E-01
3	3	-4.742437E+00	1.931550E+02	3.074157E+01	4.910499E-02

METHOD 1 NT,NBR PASSES = 1,EST. TIME = .1
METHOD 2 NT,NBR PASSES = 1,EST. TIME = .1
METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)
COMPLEX EIGENVALUE = -4.987301E+00, 1.019557E+01

C O M P L E X   E I G E N V E C T O R   NO. 1
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	1.770678E-02	0.0	0.0	0.0	3.445814E-03
		0.0	354.1173	0.0	0.0	0.0	354.3786
5	G	0.0	6.703779E-02	0.0	0.0	0.0	6.325543E-03
		0.0	354.6519	0.0	0.0	0.0	355.2574
7	G	0.0	1.423325E-01	0.0	0.0	0.0	8.642378E-03
		0.0	355.2708	0.0	0.0	0.0	356.3747
9	G	0.0	2.390400E-01	0.0	0.0	0.0	1.041446E-02
		0.0	355.9904	0.0	0.0	0.0	357.7529
11	G	0.0	3.487678E-01	0.0	0.0	0.0	1.166050E-02
		0.0	356.8311	0.0	0.0	0.0	359.6031
13	G	0.0	4.693165E-01	0.0	0.0	0.0	1.242317E-02
		0.0	357.8596	0.0	0.0	0.0	2.1068
15	G	0.0	5.954491E-01	0.0	0.0	0.0	1.285575E-02
		0.0	359.0202	0.0	0.0	0.0	4.3804
17	G	0.0	7.247639E-01	0.0	0.0	0.0	1.309894E-02
		0.0	.0989	0.0	0.0	0.0	5.5299
19	G	0.0	8.557969E-01	0.0	0.0	0.0	1.319556E-02
		0.0	.9708	0.0	0.0	0.0	5.9624
21	G	0.0	9.873974E-01	0.0	0.0	0.0	1.320803E-02
		0.0	1.6484	0.0	0.0	0.0	6.0825

MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)
COMPLEX EIGENVALUE = -7.700504E+00, 6.605570E+01

C O M P L E X E I G E N V E C T O R NO. 2
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	9.167268E-02	0.0	0.0	0.0	1.660892E-02
		0.0	185.7168	0.0	0.0	0.0	185.5631
5	G	0.0	2.3[illegible]7075E-01	0.0	0.0	0.0	2.3149[illegible]E-02
		0.0	185.3994	0.0	0.0	0.0	184.9498
7	G	0.0	5.240814E-01	0.0	0.0	0.0	2.050902E-02
		0.0	185.0505	0.0	0.0	0.0	184.1960
9	G	0.0	6.845695E-01	0.0	0.0	0.0	1.057729E-02
		0.0	184.7641	0.0	0.0	0.0	183.4477
11	G	0.0	7.204565E-01	0.0	0.0	0.0	3.960370E-03
		0.0	184.8357	0.0	0.0	0.0	354.8744
13	G	0.0	6.024422E-01	0.0	0.0	0.0	1.996430E-02
		0.0	186.6053	0.0	0.0	0.0	355.4129
15	G	0.0	3.398007E-01	0.0	0.0	0.0	3.401664E-02
		0.0	1[illegible].0411	0.0	0.0	0.0	354.6151
17	G	0.0	1.4[illegible]79[illegible]E-01	0.0	0.0	0.0	4.342209E-02
		0.0	2[illegible].2052	0.0	0.0	0.0	355.1783
19	G	0.0	5.475374E-01	0.0	0.0	0.0	4.777746E-02
		0.0	342.3992	0.0	0.0	0.0	355.5846
21	G	0.0	1.024595E+00	0.0	0.0	0.0	4.863087E-02
		0.0	348.5838	0.0	0.0	0.0	355.5762

MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV REAL, INV(COMPLEX)
COMPLEX EIGENVALUE = -4.742437E+00, 1.931550E+02

C O M P L E X   E I G E N V E C T O R   NO. 3
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	2.312[illegible]E-01	0.0	0.0	0.0	3.816542E-02
		0.0	357.7028	0.0	0.0	0.0	357.4833
5	G	0.0	6.[illegible]5447E-01	0.0	0.0	0.0	3.191503E-02
		0.0	357.21[illegible]	0.0	0.0	0.0	355.9237
7	G	0.0	7.7[illegible]458[illegible]E-01	0.0	0.0	0.0	3.569917E-03
		0.0	356.1969	0.0	0.0	0.0	211.1327
9	G	0.0	5.478357E-01	0.0	0.0	0.0	4.002554E-02
		0.0	35[illegible].3[illegible]1	0.0	0.0	0.0	180.6534
11	G	0.0	5.[illegible]9963E-02	0.0	0.0	0.0	5.617398E-02
		0.0	2[illegible]4.075[illegible]	0.0	0.0	0.0	179.2279
13	G	0.0	4.712874E-01	0.0	0.0	0.0	3.881012E-02
		0.0	1[illegible].7050	0.0	0.0	0.0	179.7689
15	G	0.0	6.[illegible]E-01	0.0	0.0	0.0	2.761918E-03
		0.0	[illegible]	0.0	0.0	0.0	.4613
17	G	0.0	4.[illegible]73017E-01	0.0	0.0	0.0	4.689026E-02
		0.0	18[illegible].3473	0.0	0.0	0.0	3.0751
19	G	0.0	2.1[illegible]E-01	0.0	0.0	0.0	7.373908E-02
		0.0	3[illegible]	0.0	0.0	0.0	3.5974
21	G	0.0	9.[illegible]E-01	0.0	0.0	0.0	7.980061E-02
		0.0	2.[illegible]	0.0	0.0	0.0	3.5645

• • • END OF JOB • • •

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 11,0
TIME 10
CEND
```

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 11
  2      SUBTITLE=MODAL FREQUENCY RESPONSE ANALYSIS
  3       LABEL=CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
  4       SPC= 11
  5      DLOAD=31
  6      FREQUENCY=33
  7      METHOD=41
  8      OFREQ=ALL
  9       SET 13= 1,3,5,7,9,11,13,15,17,19,21
 10      OLOAD(PHASE)=ALL
 11      DISP(PHASE)=13
 12      VELOCITY (PHASE)  =  13
 13      BEGIN BULK
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
1-	BAROR		31			0.0	1.	0.0	1	
2-	CBAR	1		1	2					
3-	CBAR	2		2	3					
4-	CBAR	3		3	4					
5-	CBAR	4		4	5					
6-	CBAR	5		5	6					
7-	CBAR	6		6	7					
8-	CBAR	7		7	8					
9-	CBAR	8		8	9					
10-	CBAR	9		9	10					
11-	CBAR	10		10	11					
12-	CBAR	11		11	12					
13-	CBAR	12		12	13					
14-	CBAR	13		13	14					
15-	CBAR	14		14	15					
16-	CBAR	15		15	16					
17-	CBAR	16		16	17					
18-	CBAR	17		17	18					
19-	CBAR	18		18	19					
20-	CBAR	19		19	20					
21-	CBAR	20		20	21					
22-	DAREA	62	16	2	1.0					
23-	EIGR	41	INV	0.0	300.	30	4	0	1.-3	+EIGR41
24-	+EIGR41	MAX								
25-	FREQ	33	7.	3.						
26-	GRDSET							345		
27-	GRID	1		0.0						
28-	GRID	2		5.						
29-	GRID	3		10.						
30-	GRID	4		15.						
31-	GRID	5		20.						
32-	GRID	6		25.						
33-	GRID	7		30.						
34-	GRID	8		35.						
35-	GRID	9		40.						
36-	GRID	10		45.						
37-	GRID	11		50.						
38-	GRID	12		55.						
39-	GRID	13		60.						
40-	GRID	14		65.						
41-	GRID	15		70.						
42-	GRID	16		75.						
43-	GRID	17		80.						
44-	GRID	18		85.						
45-	GRID	19		90.						
46-	GRID	20		95.						
47-	GRID	21		100.						
48-	MAT1	32	[illegible].+6		.3	7.324-4				+STEEL
49-	PARAM	LMODES	4							
50-	PBAR	31	32	.30680	7.490-3	7.490-3	1.498-2			+P31

```
CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD

                                   S O R T E D   B U L K   D A T A   E C H O
          CARD
          COUNT       .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
            51-       +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
            52-       +P31A   0.75    0.75    0.
            53-       RLOAD2  61      62                      34
            54-       SPC1    11      126     1
            55-       TABLED1 34                                                              +T34
            56-       +T34            0.      1.      100.    1.      ENDT
                      ENDDATA


      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID        1



***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
          TIME ESTIMATE=       1         C AVG =      4        PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
        ADDITIONAL CORE= -23722          C MAX =      5         PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
          TIME ESTIMATE=       1         C AVG =      4        PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
        ADDITIONAL CORE= -23722          C MAX =      5         PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
          TIME ESTIMATE=       1         C AVG =      4        PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
        ADDITIONAL CORE= -23722          C MAX =      5         PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
          TIME ESTIMATE=       1         C AVG =      4        PC AVG =     0   SPILL GROUPS =     0             S AVG =      1
        ADDITIONAL CORE= -23722          C MAX =      5         PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =      1
                                         METHOD 1 NT,NBR PASSES =    1,EST. TIME =       .1
                                         METHOD 3 T ,NBR PASSES =    1,EST. TIME =       .0
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD --- INVERSE POWER METHOD

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

```
NUMBER OF EIGENVALUES EXTRACTED . . . . . .            4

NUMBER OF STARTING POINTS USED . . . . . . .           1

NUMBER OF STARTING POINT MOVES . . . . . . .           0

NUMBER OF TRIANGULAR DECOMPOSITIONS . . . .            4

TOTAL NUMBER OF VECTOR ITERATIONS . . . . .           51

REASON FOR TERMINATION . . . . . . . . . . .           6

LARGEST OFF-DIAGONAL MODAL MASS TERM . . . .    .24E-14

                                           . . .       3
          MODE PAIR . . . . . . . . . .
                                           . . .       2

NUMBER OF OFF-DIAGONAL MODAL MASS
     TERMS FAILING CRITERION . . . . . . . .           0
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	4	4.815432E+03	6.939331E+01	1.104429E+01	5.694814E-03	2.742299E+01
2	3	3.754747E+04	1.937717E+02	3.083972E+01	5.808597E-03	2.180981E+02
3	2	1.433458E+05	3.786103E+02	6.025770E+01	5.987773E-03	8.583220E+02
4	1	3.893342E+05	6.239665E+02	9.930736E+01	6.249210E-03	2.433031E+03

METHOD 3 T ,NBR PASSES = 1,EST. TIME = .0

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD

```
*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

                                      METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0
                                      METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .0

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK OEFC1    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK OESC1    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 3.000000E+00

C O M P L E X   D I S P L A C E M E N T   V E C T O R
(MAGNITUDE, PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	1.045311E-19	1.148671E-04	0.0	0.0	0.0	2.362413E-05
		180.0000	0.0	0.0	0.0	0.0	0.0
5	G	2.064882E-19	4.849763E-04	0.0	0.0	0.0	5.104215E-05
		180.0000	0.0	0.0	0.0	0.0	0.0
7	G	3.033607E-19	1.149529E-03	0.0	0.0	0.0	8.255996E-05
		180.0000	0.0	0.0	0.0	0.0	0.0
9	G	3.927633E-19	2.137832E-03	0.0	0.0	0.0	1.138303E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
11	G	4.724947E-19	3.340847E-03	0.0	0.0	0.0	1.183373E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
13	G	5.405[illegible]15E-19	4.242980E-03	0.0	0.0	0.0	4.453895E-05
		180.0000	0.0	0.0	0.0	0.0	0.0
15	G	5.953771E-19	3.8[illegible]3261E-03	0.0	0.0	0.0	1.373059E-04
		180.0000	0.0	0.0	0.0	0.0	180.0000
17	G	6.355026E-19	1.309529E-03	0.0	0.0	0.0	3.729818E-04
		180.0000	0.0	0.0	0.0	0.0	180.0000
19	G	6.59[illegible]600E-19	3.[illegible]327E-03	0.0	0.0	0.0	5.417783E-04
		180.0000	180.0000	0.0	0.0	0.0	180.0000
21	G	6.682066E-19	9.084185E-03	0.0	0.0	0.0	5.842197E-04
		180.0000	180.0000	0.0	0.0	0.0	180.0000

MODAL FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 7.000000E+00

C O M P L E X   D I S P L A C E M E N T   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	1.049675E-19	3.700355E-04	0.0	0.0	0.0	7.014669E-05
		180.0000	0.0	0.0	0.0	0.0	0.0
5	G	2.073502E-19	1.327399E-03	0.0	0.0	0.0	1.175837E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
7	G	3.046272E-19	2.652497E-03	0.0	0.0	0.0	1.441499E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
9	G	3.944031E-19	4.140781E-03	0.0	0.0	0.0	1.490565E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
11	G	4.744673E-19	5.493926E-03	0.0	0.0	0.0	1.117749E-04
		180.0000	0.0	0.0	0.0	0.0	0.0
13	G	5.428484E-19	6.091032E-03	0.0	0.0	0.0	1.088970E-05
		180.0000	0.0	0.0	0.0	0.0	180.0000
15	G	5.978627E-19	4.920035E-03	0.0	0.0	0.0	2.348203E-04
		180.0000	0.0	0.0	0.0	0.0	180.0000
17	G	6.381557E-19	1.167506E-03	0.0	0.0	0.0	5.085847E-04
		180.0000	0.0	0.0	0.0	0.0	180.0000
19	G	6.627353E-19	4.966517E-03	0.0	0.0	0.0	6.945060E-04
		180.0000	180.0000	0.0	0.0	0.0	180.0000
21	G	6.709963E-19	1.223423E-02	0.0	0.0	0.0	7.403389E-04
		180.0000	180.0000	0.0	0.0	0.0	180.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 3.000000E+00

C O M P L E X   V E L O C I T Y   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
3	G	1.970364E-18 270.0000	2.1[illegible]5194E-03 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	4.453043E-04 90.0000
5	G	3.832210E-18 270.0000	9.141[illegible]E-03 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	9.[illegible]21220E-04 90.0000
7	G	5.718215E-18 270.0000	2.1[illegible]812E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	1.5[illegible]E-03 90.0000
9	G	7.403415E-18 270.0000	4.029718E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	2.14[illegible]E-03 90.0000
11	G	8.906315E-18 270.0000	6.2[illegible]347E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	2.2[illegible]05E-03 90.0000
13	G	1.0[illegible]1E-17 270.0000	7.9[illegible]828E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	8.3[illegible]5E-04 90.0000
15	G	1.122259E-17 270.0000	7.2[illegible]E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	2.5[illegible]155E-03 270.0000
17	G	1.197894E-17 270.0000	2.4[illegible]404E-02 90.0000	0.0 0.0	0.0 0.0	0.0 0.0	7.030542E-03 270.0000
19	G	1.244033E-17 270.0000	6.349146E-02 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	1.021228E-02 270.0000
21	G	1.259540E-17 270.0000	1.7[illegible]232[illegible]E-01 270.0000	0.0 0.0	0.0 0.0	0.0 0.0	1.101228E-02 270.0000

MODAL FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 7.000000E+00

COMPLEX VELOCITY VECTOR
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	[illegible]E-18	[illegible]E-02	0.0	0.0	0.0	3.085212E-03
		270.0000	90.0000	0.0	0.0	0.0	90.0000
5	G	[illegible]740E-18	5.[illegible]E-02	0.0	0.0	0.0	5.171599E-03
		270.0000	90.0000	0.0	0.0	0.0	90.0000
7	G	1.35[illegible]20E-17	1.1[illegible]E-01	0.0	0.0	0.0	6.340044E-03
		270.0000	90.0000	0.0	0.0	0.0	90.0000
9	G	1.734675E-17	1.[illegible]01211E-01	0.0	0.0	0.0	6.555847E-03
		270.0000	90.0000	0.0	0.0	0.0	90.0000
11	G	2.086816E-17	2.417674E-01	0.0	0.0	0.0	4.916117E-03
		270.0000	90.0000	0.0	0.0	0.0	90.0000
13	G	2.387572E-17	2.[illegible]E-01	0.0	0.0	0.0	4.789540E-04
		270.0000	90.0000	0.0	0.0	0.0	270.0000
15	G	2.629538E-17	2.1[illegible]3944E-01	0.0	0.0	0.0	1.050386E-02
		270.0000	90.0000	0.0	0.0	0.0	270.0000
17	G	2.805756E-17	5.134[illegible]E-02	0.0	0.0	0.0	2.236[illegible]0E-02
		270.0000	90.0000	0.0	0.0	0.0	270.0000
19	G	2.914[illegible]2E-17	2.1[illegible]E-01	0.0	0.0	0.0	3.[illegible]45[illegible]7E-02
		270.0000	270.0000	0.0	0.0	0.0	270.0000
21	G	2.951196E-17	5.380895E-01	0.0	0.0	0.0	3.256444E-02
		270.0000	270.0000	0.0	0.0	0.0	270.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 3.000000E+00

C O M P L E X   L O A D   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0	1.000000E+00	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD
FREQUENCY = 7.000000E+00

C O M P L E X   L O A D   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0 0.0	1.000000E+00 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 11,0
TIME 10
CEND
```

```
CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

                              C A S E    C O N T R O L    D E C K    E C H O
        CARD
        COUNT
          1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 11A
          2      SUBTITLE=MODAL FREQUENCY RESPONSE ANALYSIS
          3       LABEL=CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
          4       SPC= 11
          5      METHOD=42
          6      DLOAD=61
          7      FREQUENCY=33
          8      OFREQ=ALL
          9       SET 13= 1,3,5,7,9,11,13,15,17,19,21
         10      DISP(PHASE)=13
         11      VELOCITY (PHASE)  =  13
         12      OLOAD(PHASE)=ALL
         13      BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

```
                              S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
    1-        BAROR           31                     0.0      1.       0.0      1
    2-        CBAR    1               1       2
    3-        CBAR    2               2       3
    4-        CBAR    3               3       4
    5-        CBAR    4               4       5
    6-        CBAR    5               5       6
    7-        CBAR    6               6       7
    8-        CBAR    7               7       8
    9-        CBAR    8               8       9
   10-        CBAR    9               9       10
   11-        CBAR    10              10      11
   12-        CBAR    11              11      12
   13-        CBAR    12              12      13
   14-        CBAR    13              13      14
   15-        CBAR    14              14      15
   16-        CBAR    15              15      16
   17-        CBAR    16              16      17
   18-        CBAR    17              17      18
   19-        CBAR    18              18      19
   20-        CBAR    19              19      20
   21-        CBAR    20              20      21
   22-        DAREA   62      16      2       1.0
   23-        EIGR    42      GIV     0.0     800.    15      8       0       1.-3    +EIGR42
   24-        +EIGR42     MAX
   25-        FREQ    33      7.      3.
   26-        GRDSET                                                  345
   27-        GRID    1               0.0
   28-        GRID    2               5.
   29-        GRID    3               10.
   30-        GRID    4               15.
   31-        GRID    5               20.
   32-        GRID    6               25.
   33-        GRID    7               30.
   34-        GRID    8               35.
   35-        GRID    9               40.
   36-        GRID    10              45.
   37-        GRID    11              50.
   38-        GRID    12              55.
   39-        GRID    13              60.
   40-        GRID    14              65.
   41-        GRID    15              70.
   42-        GRID    16              75.
   43-        GRID    17              80.
   44-        GRID    18              85.
   45-        GRID    19              90.
   46-        GRID    20              95.
   47-        GRID    21              100.
   48-        MAT1    32      30.+6           .3      7.324-4                         +STEEL
   49-        OMIT1   6       2       THRU    21
   50-        PARAM   LMODES  8
```

```
CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

                                S O R T E D   B U L K   D A T A   E C H O
 CARD
 COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   51-        PBAR    31      32              .30080  7.490-3 7.490-3 1.498-2
   52-        +P31    0.3125  0.              -0.3125 0.      0.                              +P31
   53-        +P31A   0.75    0.75            0.              0.3125  0.      0.              +P31A
   54-        RLOAD2  61      62
   55-        SPC1    11      126     1                       34
   56-        TABLED1 34
   57-        +T34            0.      1.      100.    1.      ENDT                            +T34
              ENDDATA


   **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KDD      ( N =    20 )
           TIME ESTIMATE=       1            C AVG =       1            PC AVG =      0   SPILL GROUPS =      0              S AVG =      1
        ADDITIONAL CORE= -26503              C MAX =       2            PCMAX =       0      PC GROUPS =      0   PREFACE LOOPS =      1
                                              METHOD 1 T  ,NBR PASSES =     1,EST. TIME =        .2
                                              MPYAD--NULL MATRIX PRODUCT
                                              MPYAD--NULL MATRIX PRODUCT
                                              MPYAD--NULL MATRIX PRODUCT


*** USER INFORMATION MESSAGE 2016, GIVENS TIME ESTIMATE IS          6 SECONDS.
                                  PROBLEM SIZE IS       40, SPILL WILL OCCUR FOR THIS CORE AT A PROBLEM SIZE OF      248 .
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK MAA      ( N =    40 )
           TIME ESTIMATE=       1            C AVG =       1            PC AVC =      0   SPILL GROUPS =      0              S AVG =      1
        ADDITIONAL CORE= -23739              C MAX =       1            PCMAX =       0      PC GROUPS =      0   PREFACE LOOPS =      1
                                              METHOD 2 NT,NBR PASSES =     1,EST. TIME =        .3
                                              METHOD 2 T ,NBR PASSES =     1,EST. TIME =        .3
                                              METHOD 1 NT,NBR PASSES =     1,EST. TIME =        .1
                                              METHOD 1 NT,NBR PASSES =     1,EST. TIME =        .1
                                              METHOD 3 T ,NBR PASSES =     1,EST. TIME =        .1
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (GIVENS METHOD)

```
NUMBER OF EIGENVALUES EXTRACTED . . . . . . .          40
NUMBER OF EIGENVECTORS COMPUTED . . . . . . .           8
NUMBER OF EIGENVALUE CONVERGENCE FAILURES . .           0
NUMBER OF EIGENVECTOR CONVERGENCE FAILURES. .           0

REASON FOR TERMINATION. . . . . . . . . . . .           1

LARGEST OFF-DIAGONAL MODAL MASS TERM. . . . .    1.53E-14
                                        . . .           8
          MODE PAIR. . . . . . . . . . .
                                        . . .           7
NUMBER OF OFF-DIAGONAL MODAL MASS
     TERMS FAILING CRITERION. . . . . . . . .           0
```

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	40	1.2[illegible]5E+02	1.110[illegible]E+01	1.76751[illegible]E+00	5.628510E-03	6.941961E-01
2	39	4.[illegible]E+03	[illegible]E+01	1.10442[illegible]E+01	5.[illegible]5221E-03	2.7424[illegible]E+01
3	38	3.7[illegible]E+04	1.[illegible]E+02	3.083972E+01	5.808538E-03	2.1809[illegible]E+02
4	37	1.43[illegible]E+05	3.7[illegible]E+02	6.025770E+01	5.9[illegible]8062E-03	8.583633E+02
5	36	3.[illegible]3342E+05	6.2[illegible]E+02	9.9307[illegible]E+01	6.248952E-03	2.432931E+03
6	35	8.632044E+05	9.[illegible]E+02	1.4786[illegible]E+02	6.618358E-03	5.713022E+03
7	34	1.672191E+06	1.2[illegible]E+03	2.055[illegible]E+02	7.135542E-03	1.193199E+04
8	33	2.[illegible]E+06	1.7[illegible]E+03	2.7294[illegible]E+02	7.857788E-03	2.311128E+04
9	32	4.[illegible]E+06	2.1[illegible]E+03	3.4904[illegible]E+02	0.0	0.0
10	31	7.427281E+06	2.72[illegible]E+03	4.3374[illegible]E+02	0.0	0.0
11	20	1.010158E+07	3.17[illegible]E+03	5.058419E+02	0.0	0.0
12	30	1.093304E+07	3.30[illegible]E+03	5.264887E+02	0.0	0.0
13	29	1.549126E+07	3.[illegible]E+03	6.264170E+02	0.0	0.0
14	28	2.116505E+07	4.[illegible]E+03	7.322001E+02	0.0	0.0
15	27	2.797776E+07	5.2[illegible]E+03	8.41834[illegible]E+02	0.0	0.0
16	26	3.581118E+07	5.[illegible]E+03	9.524221E+02	0.0	0.0
17	25	4.4357[illegible]E+07	6.[illegible]E+03	1.060000E+03	0.0	0.0
18	24	5.307959E+07	7.2[illegible]E+03	1.1595[illegible]E+03	0.0	0.0
19	23	6.121702E+07	7.824131E+03	1.24524[illegible]E+03	0.0	0.0
20	22	6.788487E+07	8.23947[illegible]E+03	1.311352E+03	0.0	0.0
21	21	7.227383E+07	8.5013[illegible]E+03	1.353037E+03	0.0	0.0
22	19	9.0540[illegible]5E+07	9.5153[illegible]E+03	1.514407E+03	0.0	0.0
23	18	2.4[illegible]E+08	1.57[illegible]E+04	2.5136[illegible]E+03	0.0	0.0
24	17	4.82[illegible]31E+08	2.1974[illegible]E+04	3.497367E+03	0.0	0.0
25	16	7.851252E+08	2.8020[illegible]E+04	4.45953[illegible]E+03	0.0	0.0
26	15	1.148723E+09	3.3[illegible]E+04	5.394209E+03	0.0	0.0
27	14	1.564723E+09	3.955[illegible]E+04	6.29562[illegible]E+03	0.0	0.0
28	13	2.022883E+09	4.497[illegible]E+04	7.158228E+03	0.0	0.0
29	12	2.511921E+09	5.0119[illegible]E+04	7.976698E+03	0.0	0.0
30	11	3.019795E+09	5.4952[illegible]7E+04	8.74599[illegible]E+03	0.0	0.0
31	10	3.534000E+09	5.9447[illegible]E+04	9.461357E+03	0.0	0.0
32	9	4.041874E+09	6.357[illegible]E+04	1.011839E+04	0.0	0.0
33	8	4.509912E+09	6.7[illegible]120[illegible]E+04	1.071305E+04	0.0	0.0
34	7	4.989072E+09	7.0[illegible]7E+04	1.124165E+04	0.0	0.0
35	6	5.405073E+09	7.35192[illegible]E+04	1.17009[illegible]E+04	0.0	0.0
36	5	5.768671E+09	7.5951[illegible]E+04	1.208810E+04	0.0	0.0
37	4	6.070913E+09	7.7916[illegible]E+04	1.240073E+04	0.0	0.0
38	3	6.304357E+09	7.93[illegible]E+04	1.26369[illegible]E+04	0.0	0.0
39	2	6.463255E+09	8.03[illegible]437E+04	1.279516E+04	0.0	0.0
40	1	6.543694E+09	8.08[illegible]310E+04	1.287454E+04	0.0	0.0

MPYAD--NULL MATRIX PRODUCT
METHOD 3 T ,NBR PASSES = 1,EST. TIME = .0

METHOD 1 NT,NBR PASSES = 1,EST. TIME = .2
METHOD 1 T ,NBR PASSES = 1,EST. TIME = .1

```
CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD



*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .1
                                   METHOD 1 NT,NBR PASSES =    1,EST. TIME =        .1

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK OEFC1    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

*** SYSTEM WARNING MESSAGE 3022

    DATA BLOCK OESC1    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

MODAL FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 3.000000E+00

C O M P L E X   D I S P L A C E M E N T   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	8.348178E-03	0.0	0.0	0.0	1.625441E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
5	G	0.0	3.167907E-02	0.0	0.0	0.0	3.000328E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
7	G	0.0	6.715356E-02	0.0	0.0	0.0	4.132480E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
9	G	0.0	1.135557E-01	0.0	0.0	0.0	5.033625E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
11	G	0.0	1.676101E-01	0.0	0.0	0.0	5.746013E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
13	G	0.0	2.273395E-01	0.0	0.0	0.0	6.307496E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
15	G	0.0	2.935765E-01	0.0	0.0	0.0	6.808653E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
17	G	0.0	3.639979E-01	0.0	0.0	0.0	7.250828E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
19	G	0.0	4.377821E-01	0.0	0.0	0.0	7.460974E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
21	G	0.0	5.125853E-01	0.0	0.0	0.0	7.485426E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 7.000000E+00

C O M P L E X D I S P L A C E M E N T V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	7.305132E-04	0.0	0.0	0.0	1.421231E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
5	G	0.0	2.802981E-03	0.0	0.0	0.0	2.718849E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
7	G	0.0	6.142323E-03	0.0	0.0	0.0	3.934115E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
9	G	0.0	1.064694E-02	0.0	0.0	0.0	5.094536E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
11	G	0.0	1.641437E-02	0.0	0.0	0.0	6.483285E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
13	G	0.0	2.370404E-02	0.0	0.0	0.0	8.181114E-04
		0.0	180.0000	0.0	0.0	0.0	180.0000
15	G	0.0	3.310563E-02	0.0	0.0	0.0	1.083911E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
17	G	0.0	4.560476E-02	0.0	0.0	0.0	1.407358E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
19	G	0.0	6.069944E-02	0.0	0.0	0.0	1.574698E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000
21	G	0.0	7.558663E-02	0.0	0.0	0.0	1.592649E-03
		0.0	180.0000	0.0	0.0	0.0	180.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 3.000000E+00

C O M P L E X   V E L O C I T Y   V E C T O R
(MAGNITUDE, PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	1.5[illegible]E-01	0.0	0.0	0.0	3.063884E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
5	G	0.0	5.[illegible]71[illegible]E-01	0.0	0.0	0.0	5.655484E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
7	G	0.0	1.273296E+00	0.0	0.0	0.0	7.789541E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
9	G	0.0	2.1[illegible]E+00	0.0	0.0	0.0	9.488160E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
11	G	0.0	3.1[illegible]E+00	0.0	0.0	0.0	1.083475E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
13	G	0.0	4.2[illegible]7500E+00	0.0	0.0	0.0	1.188325E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
15	G	0.0	5.[illegible]E+00	0.0	0.0	0.0	1.283401E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
17	G	0.0	6.6[illegible]1194E+00	0.0	0.0	0.0	1.366749E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
19	G	0.0	8.252111E+00	0.0	0.0	0.0	1.406360E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000
21	G	0.0	9.662005E+00	0.0	0.0	0.0	1.410969E-01
		0.0	270.0000	0.0	0.0	0.0	270.0000

MODAL FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 7.000000E+00

C O M P L E X   V E L O C I T Y   V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	3.212[illegible]65E-02	0.0	0.0	0.0	6.250901E-03
		0.0	270.0000	0.0	0.0	0.0	270.0000
5	G	0.0	1.232815E-01	0.0	0.0	0.0	1.195812E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
7	G	0.0	2.7[illegible]1534E-01	0.0	0.0	0.0	1.730314E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
9	G	0.0	4.[illegible]2771E-01	0.0	0.0	0.0	2.240694E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
11	G	0.0	7.219415E-01	0.0	0.0	0.0	2.651498E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
13	G	0.0	1.042[illegible]E+00	0.0	0.0	0.0	3.598242E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
15	G	0.0	1.4[illegible]5062E+00	0.0	0.0	0.0	4.767288E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
17	G	0.0	2.0[illegible]3E+00	0.0	0.0	0.0	6.1[illegible]9884E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
19	G	0.0	2.[illegible]9701E+00	0.0	0.0	0.0	6.925888E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000
21	G	0.0	3.3[illegible]845[illegible]E+00	0.0	0.0	0.0	7.004835E-02
		0.0	270.0000	0.0	0.0	0.0	270.0000

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 3.000000E+00

C O M P L E X L O A D V E C T O R
(MAGNITUDE, PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0	1.000000E+00	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0

AD-A096 867 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT.(U)
FEB 81 G C EVERSTINE, M M HURWITZ
UNCLASSIFIED DTNSRDC/CMLD-81-04 NL

5 OF 5
AD
A096867

END
DATE
FILMED
4-81
DTIC

MODAL FREQUENCY RESPONSE ANALYSIS

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD
FREQUENCY = 7.000000E+00

C O M P L E X L O A D V E C T O R
(MAGNITUDE/PHASE)

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
16	G	0.0	1.000000E+00	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0

* * * END OF JOB * * *

CDC 6000 SERIES
6400 / 6500

RIGID FORMAT SERIES P

LEVEL 17.5.1

SYSTEM GENERATION DATE - 8/15/79

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 12,0
TIME 10
CEND
```

```
                              C A S E    C O N T R O L    D E C K    E C H O
   CARD
   COUNT
     1       TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 12
     2       SUBTITLE=MODAL TRANSIENT ANALYSIS
     3       LABEL=INVERSE POWER METHOD
     4        SPC= 11
     5       DLOAD=92
     6       TSTEP=71
     7       METHOD=41
     8       SET 25 = 7,13,21
     9       DISP=25
    10       BEGIN BULK


*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.
```

INVERSE POWER METHCD

S O R T E D   B U L K   D A T A   E C H O

```
   CARD
   COUNT      .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
      1-      BAROR           31                      0.0     1.      0.0     1
      2-      CBAR    1               1       2
      3-      CBAR    2               2       3
      4-      CBAR    3               3       4
      5-      CBAR    4               4       5
      6-      CBAR    5               5       6
      7-      CBAR    6               6       7
      8-      CBAR    7               7       8
      9-      CBAR    8               8       9
     10-      CBAR    9               9       10
     11-      CBAR    10              10      11
     12-      CBAR    11              11      12
     13-      CBAR    12              12      13
     14-      CBAR    13              13      14
     15-      CBAR    14              14      15
     16-      CBAR    15              15      16
     17-      CBAR    16              16      17
     18-      CBAR    17              17      18
     19-      CBAR    18              18      19
     20-      CBAR    19              19      20
     21-      CBAR    20              20      21
     22-      DAREA   62      16      2       2.0
     23-      EIGR    41      INV     0.0     300.    30      12      0       1.-3    +EIGR41
     24-      +EIGR41 MAX
     25-      GRDSET                                                  345
     26-      GRID    1               0.0
     27-      GRID    2               5.
     28-      GRID    3               10.
     29-      GRID    4               15.
     30-      GRID    5               20.
     31-      GRID    6               25.
     32-      GRID    7               30.
     33-      GRID    8               35.
     34-      GRID    9               40.
     35-      GRID    10              45.
     36-      GRID    11              50.
     37-      GRID    12              55.
     38-      GRID    13              60.
     39-      GRID    14              65.
     40-      GRID    15              70.
     41-      GRID    16              75.
     42-      GRID    17              80.
     43-      GRID    18              85.
     44-      GRID    19              90.
     45-      GRID    20              95.
     46-      GRID    21              100.
     47-      MAT1    32      30.+6           .3      7.324-4                         +STEEL
     48-      PARAM   LMODES  25
     49-      PBAR    31      32      .30680  7.490-3 7.490-3 1.498-2                 +P31
     50-      +P31    0.3125  0.      -0.3125 0.      0.      0.3125  0.      0.      +P31A
```

```
MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD

                                      S O R T E D   B U L K   D A T A   E C H O
           CARD
           COUNT        .  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  ..  10  .
             51-        +P31A   0.75    0.75    0.
             52-        SPC1    11      126     1
             53-        TABLED1 37                                                      +T37
             54-        +T37    -1.     0.      0.      0.      0.005   1.      0.015   1.0     +T*
             55-        +T*     0.020   0.      1.0     0.      ENDT
             56-        TLOAD1  92      62                      37
             57-        TSTEP   71      180     .00125  4
                        ENDDATA

      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**

*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =    60 )
           TIME ESTIMATE=       1        C AVG =     4         PC AVG =     0   SPILL GROUPS =    0           S AVG =       1
         ADDITIONAL CORE= -23722         C MAX =     5          PCMAX =     0      PC GROUPS =    0  PREFACE LOOPS =       1
                                         METHOD 1 NT,NBR PASSES =   1,EST. TIME =      .2
                                         METHOD 3 T ,NBR PASSES =   1,EST. TIME =      .1
```

INVERSE POWER METHCD

E I G E N V A L U E   A N A L Y S I S   S U M M A R Y   (INVERSE POWER METHOD)

NUMBER OF EIGENVALUES EXTRACTED	9
NUMBER OF STARTING POINTS USED	3
NUMBER OF STARTING POINT MOVES	0
NUMBER OF TRIANGULAR DECOMPOSITIONS	7
TOTAL NUMBER OF VECTOR ITERATIONS	98
REASON FOR TERMINATION	7
LARGEST OFF-DIAGONAL MODAL MASS TERM	.59E-14
MODE PAIR	6 5
NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION	0

INVERSE POWER METHOD

R E A L E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	5	1.233355E+02	1.110565E+01	1.767519E+00	5.627785E-03	6.941055E-01
2	4	4.815432E+03	6.939331E+01	1.104429E+01	5.696105E-03	2.742921E+01
3	3	3.754747E+04	1.937717E+02	3.083972E+01	5.808580E-03	2.180975E+02
4	2	1.433458E+05	3.786103E+02	6.025770E+01	5.987773E-03	8.583220E+02
5	1	3.893342E+05	6.239665E+02	9.930736E+01	6.249210E-03	2.433031E+03
6	6	8.632084E+05	9.290901E+02	1.478693E+02	6.618173E-03	5.712863E+03
7	7	1.672191E+06	1.293132E+03	2.058084E+02	7.136382E-03	1.193340E+04
8	8	2.941194E+06	1.714991E+03	2.729493E+02	7.857858E-03	2.311149E+04
9	9	4.809841E+06	2.193135E+03	3.490483E+02	8.866612E-03	4.264699E+04

```
METHOD 3 T ,NBR PASSES =   1,EST. TIME =    .1
METHOD 1 NT,NBR PASSES =   1,EST. TIME =    .4
MPYAD--NULL MATRIX PRODUCT
METHOD 1 NT,NBR PASSES =   1,EST. TIME =    .2
METHOD 1 NT,NBR PASSES =   1,EST. TIME =    .7
METHOD 1 NT,NBR PASSES =   1,EST. TIME =    .2


METHOD 1 T ,NBR PASSES =   1,EST. TIME =    .2
```

INVERSE POWER METHOD

```
*** USER WARNING MESSAGE 2078, SDR2 OUTPUT DATA BLOCK NO. 3 IS PURGED


                          METHOD 1 T ,NBR PASSES =    1,EST. TIME =        .2
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OUPV2    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OQP2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OEF2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OES2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK PUGV     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OQP2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OUPV2    IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OES2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK OEF2     IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD
POINT-ID = 7

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	-1.261871E-12	2.186254E-05	0.0	0.0	0.0	-6.076254E-06
1.000000E-02	G	-1.043197E-12	-7.990129E-04	0.0	0.0	0.0	-5.241078E-05
1.500000E-02	G	-1.057532E-12	-2.070850E-03	0.0	0.0	0.0	1.896841E-04
2.000000E-02	G	-1.181367E-14	5.306612E-04	0.0	0.0	0.0	4.850205E-04
2.500000E-02	G	-2.041656E-13	9.707604E-03	0.0	0.0	0.0	6.530367E-04
3.000000E-02	G	2.432076E-14	2.036922E-02	0.0	0.0	0.0	7.168977E-04
3.500000E-02	G	2.028489E-13	2.468982E-02	0.0	0.0	0.0	8.898498E-04
4.000000E-02	G	-3.692949E-14	2.201919E-02	0.0	0.0	0.0	1.079347E-03
4.500000E-02	G	-2.001426E-13	1.619779E-02	0.0	0.0	0.0	1.118305E-03
5.000000E-02	G	4.871954E-14	1.261497E-02	0.0	0.0	0.0	1.217293E-03
5.500000E-02	G	1.969655E-13	1.515825E-02	0.0	0.0	0.0	1.332490E-03
6.000000E-02	G	-5.997008E-14	2.308053E-02	0.0	0.0	0.0	1.317646E-03
6.500000E-02	G	-1.938088E-13	2.917081E-02	0.0	0.0	0.0	1.304418E-03
7.000000E-02	G	7.159913E-14	2.822149E-02	0.0	0.0	0.0	1.466221E-03
7.500000E-02	G	1.899040E-13	2.274324E-02	0.0	0.0	0.0	1.557254E-03
8.000000E-02	G	-8.349014E-14	1.854905E-02	0.0	0.0	0.0	1.636720E-03
8.500000E-02	G	-1.845782E-13	1.970865E-02	0.0	0.0	0.0	1.801247E-03
9.000000E-02	G	9.462241E-14	2.784217E-02	0.0	0.0	0.0	1.966047E-03
9.500000E-02	G	1.784604E-13	3.852071E-02	0.0	0.0	0.0	1.994342E-03
1.000000E-01	G	-1.047813E-13	4.403730E-02	0.0	0.0	0.0	2.167179E-03
1.050000E-01	G	-1.724099E-13	4.207519E-02	0.0	0.0	0.0	2.383117E-03
1.100000E-01	G	1.148606E-13	3.778468E-02	0.0	0.0	0.0	2.508191E-03
1.150000E-01	G	1.660588E-13	3.632201E-02	0.0	0.0	0.0	2.577188E-03
1.200000E-01	G	-1.252433E-13	4.041058E-02	0.0	0.0	0.0	2.750784E-03
1.250000E-01	G	-1.584882E-13	4.856266E-02	0.0	0.0	0.0	2.731587E-03
1.300000E-01	G	1.350627E-13	5.443458E-02	0.0	0.0	0.0	2.675765E-03
1.350000E-01	G	1.498759E-13	5.211495E-02	0.0	0.0	0.0	2.707847E-03
1.400000E-01	G	-1.436006E-13	4.403871E-02	0.0	0.0	0.0	2.758203E-03
1.450000E-01	G	-1.412303E-13	3.657118E-02	0.0	0.0	0.0	2.620581E-03
1.500000E-01	G	1.516649E-13	3.430896E-02	0.0	0.0	0.0	2.603267E-03
1.550000E-01	G	1.326855E-13	3.801585E-02	0.0	0.0	0.0	2.554433E-03
1.600000E-01	G	-1.598514E-13	4.416725E-02	0.0	0.0	0.0	2.435662E-03
1.650000E-01	G	-1.233178E-13	4.538970E-02	0.0	0.0	0.0	2.319673E-03
1.700000E-01	G	1.677263E-13	3.970811E-02	0.0	0.0	0.0	2.414352E-03
1.750000E-01	G	1.128162E-13	3.258686E-02	0.0	0.0	0.0	2.384210E-03
1.800000E-01	G	-1.743502E-13	2.956178E-02	0.0	0.0	0.0	2.386767E-03
1.850000E-01	G	-1.020789E-13	3.248173E-02	0.0	0.0	0.0	2.387412E-03
1.900000E-01	G	1.799178E-13	4.094721E-02	0.0	0.0	0.0	2.431067E-03
1.950000E-01	G	9.171660E-14	4.740476E-02	0.0	0.0	0.0	2.304742E-03
2.000000E-01	G	-1.853876E-13	4.629325E-02	0.0	0.0	0.0	2.360957E-03
2.050000E-01	G	-8.104420E-14	3.848578E-02	0.0	0.0	0.0	2.388987E-03
2.100000E-01	G	1.907632E-13	3.254864E-02	0.0	0.0	0.0	2.329693E-03
2.150000E-01	G	6.935256E-14	3.111387E-02	0.0	0.0	0.0	2.187904E-03
2.200000E-01	G	-1.950617E-13	3.453392E-02	0.0	0.0	0.0	2.164077E-03
2.250000E-01	G	-5.720106E-14	3.886284E-02	0.0	0.0	0.0	1.919293E-03

MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD
POINT-ID = 13

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	-2.248671E-12	4.550178E-04	0.0	0.0	0.0	1.032511E-04
1.000000E-02	G	-1.858991E-12	5.050461E-03	0.0	0.0	0.0	4.320439E-04
1.500000E-02	G	-1.664536E-12	1.435826E-02	0.0	0.0	0.0	6.315540E-04
2.000000E-02	G	-2.105211E-14	2.467135E-02	0.0	0.0	0.0	6.569893E-04
2.500000E-02	G	-3.638258E-13	3.057819E-02	0.0	0.0	0.0	5.566826E-04
3.000000E-02	G	4.333990E-14	3.434734E-02	0.0	0.0	0.0	4.538724E-04
3.500000E-02	G	3.614795E-13	4.039454E-02	0.0	0.0	0.0	4.814232E-04
4.000000E-02	G	-6.590883E-14	5.075236E-02	0.0	0.0	0.0	8.902707E-04
4.500000E-02	G	-3.566567E-13	6.119375E-02	0.0	0.0	0.0	1.607268E-03
5.000000E-02	G	8.681940E-14	6.824142E-02	0.0	0.0	0.0	2.062402E-03
5.500000E-02	G	3.509952E-13	7.320551E-02	0.0	0.0	0.0	2.112357E-03
6.000000E-02	G	-1.068675E-13	7.331441E-02	0.0	0.0	0.0	2.064350E-03
6.500000E-02	G	-3.453698E-13	7.473993E-02	0.0	0.0	0.0	2.081494E-03
7.000000E-02	G	1.275906E-13	8.044312E-02	0.0	0.0	0.0	2.267783E-03
7.500000E-02	G	3.384113E-13	9.043395E-02	0.0	0.0	0.0	2.811137E-03
8.000000E-02	G	-1.467805E-13	9.778439E-02	0.0	0.0	0.0	3.366721E-03
8.500000E-02	G	-3.289207E-13	1.048253E-01	0.0	0.0	0.0	3.495430E-03
9.000000E-02	G	1.686184E-13	1.099204E-01	0.0	0.0	0.0	3.252421E-03
9.500000E-02	G	3.180188E-13	1.118990E-01	0.0	0.0	0.0	3.056295E-03
1.000000E-01	G	-1.867216E-13	1.169505E-01	0.0	0.0	0.0	2.983929E-03
1.050000E-01	G	-3.072367E-13	1.264431E-01	0.0	0.0	0.0	3.180162E-03
1.100000E-01	G	2.040830E-13	1.361840E-01	0.0	0.0	0.0	3.646080E-03
1.150000E-01	G	2.959190E-13	1.434422E-01	0.0	0.0	0.0	3.935702E-03
1.200000E-01	G	-2.231553E-13	1.455609E-01	0.0	0.0	0.0	3.761215E-03
1.250000E-01	G	-2.824271E-13	1.438011E-01	0.0	0.0	0.0	3.472372E-03
1.300000E-01	G	2.406835E-13	1.414318E-01	0.0	0.0	0.0	3.342535E-03
1.350000E-01	G	2.670807E-13	1.432261E-01	0.0	0.0	0.0	3.449467E-03
1.400000E-01	G	-2.560050E-13	1.468918E-01	0.0	0.0	0.0	3.850138E-03
1.450000E-01	G	-2.516743E-13	1.493467E-01	0.0	0.0	0.0	4.342264E-03
1.500000E-01	G	2.702689E-13	1.478184E-01	0.0	0.0	0.0	4.417686E-03
1.550000E-01	G	2.364472E-13	1.428294E-01	0.0	0.0	0.0	4.122494E-03
1.600000E-01	G	-2.848173E-13	1.389374E-01	0.0	0.0	0.0	3.857976E-03
1.650000E-01	G	-2.197539E-13	1.328721E-01	0.0	0.0	0.0	3.779453E-03
1.700000E-01	G	2.988905E-13	1.343591E-01	0.0	0.0	0.0	3.886042E-03
1.750000E-01	G	2.010400E-13	1.377476E-01	0.0	0.0	0.0	4.229685E-03
1.800000E-01	G	-3.106943E-13	1.383891E-01	0.0	0.0	0.0	4.379517E-03
1.850000E-01	G	-1.819060E-13	1.359961E-01	0.0	0.0	0.0	4.016903E-03
1.900000E-01	G	3.206158E-13	1.302536E-01	0.0	0.0	0.0	3.458955E-03
1.950000E-01	G	1.634402E-13	1.254169E-01	0.0	0.0	0.0	3.130440E-03
2.000000E-01	G	-3.303631E-13	1.241376E-01	0.0	0.0	0.0	3.000124E-03
2.050000E-01	G	-1.444218E-13	1.260837E-01	0.0	0.0	0.0	3.111982E-03
2.100000E-01	G	3.399426E-13	1.254798E-01	0.0	0.0	0.0	3.331758E-03
2.150000E-01	G	1.235872E-13	1.208844E-01	0.0	0.0	0.0	3.240538E-03
2.200000E-01	G	-3.476025E-13	1.114197E-01	0.0	0.0	0.0	2.713112E-03
2.250000E-01	G	-1.019330E-13	1.003113E-01	0.0	0.0	0.0	2.267016E-03

INVERSE POWER METHOD
POINT-ID = 21

D I S P L A C E M E N T V E C T O R

TIME	TYPE	T1	T2	T3	R1	R2	R3
0.0	G	0.0	0.0	0.0	0.0	0.0	0.0
5.000000E-03	G	-2.779511E-12	-6.147149E-04	0.0	0.0	0.0	-9.515430E-05
1.000000E-02	G	-2.297839E-12	-1.965657E-03	0.0	0.0	0.0	-6.237179E-04
1.500000E-02	G	-2.329415E-12	4.113298E-03	0.0	0.0	0.0	-7.994736E-04
2.000000E-02	G	-2.602184E-14	1.921862E-02	0.0	0.0	0.0	-5.550856E-04
2.500000E-02	G	-4.497135E-13	4.161522E-02	0.0	0.0	0.0	1.659693E-04
3.000000E-02	G	5.357107E-14	6.571902E-02	0.0	0.0	0.0	9.484768E-04
3.500000E-02	G	4.468132E-13	8.675461E-02	0.0	0.0	0.0	1.537202E-03
4.000000E-02	G	-8.134419E-14	9.966683E-02	0.0	0.0	0.0	1.451165E-03
4.500000E-02	G	-4.408519E-13	1.074940E-01	0.0	0.0	0.0	8.898247E-04
5.000000E-02	G	1.073147E-13	1.210475E-01	0.0	0.0	0.0	8.065176E-04
5.500000E-02	G	4.338539E-13	1.448452E-01	0.0	0.0	0.0	1.610986E-03
6.000000E-02	G	-1.320954E-13	1.720705E-01	0.0	0.0	0.0	2.656897E-03
6.500000E-02	G	-4.269005E-13	1.963198E-01	0.0	0.0	0.0	3.518933E-03
7.000000E-02	G	1.577106E-13	2.122484E-01	0.0	0.0	0.0	3.811606E-03
7.500000E-02	G	4.182994E-13	2.163017E-01	0.0	0.0	0.0	3.370441E-03
8.000000E-02	G	-1.839028E-13	2.215928E-01	0.0	0.0	0.0	2.736035E-03
8.500000E-02	G	-4.065684E-13	2.327291E-01	0.0	0.0	0.0	2.899012E-03
9.000000E-02	G	2.084238E-13	2.498113E-01	0.0	0.0	0.0	3.582257E-03
9.500000E-02	G	3.930929E-13	2.658076E-01	0.0	0.0	0.0	4.222579E-03
1.000000E-01	G	-2.308006E-13	2.754208E-01	0.0	0.0	0.0	4.450644E-03
1.050000E-01	G	-3.797655E-13	2.764284E-01	0.0	0.0	0.0	4.088589E-03
1.100000E-01	G	2.530021E-13	2.707383E-01	0.0	0.0	0.0	3.132176E-03
1.150000E-01	G	3.657760E-13	2.703026E-01	0.0	0.0	0.0	2.688739E-03
1.200000E-01	G	-2.758722E-13	2.803031E-01	0.0	0.0	0.0	3.137502E-03
1.250000E-01	G	-3.491003E-13	2.951284E-01	0.0	0.0	0.0	3.966929E-03
1.300000E-01	G	2.975012E-13	3.063293E-01	0.0	0.0	0.0	4.469585E-03
1.350000E-01	G	3.301299E-13	3.115726E-01	0.0	0.0	0.0	4.631910E-03
1.400000E-01	G	-3.164396E-13	3.086722E-01	0.0	0.0	0.0	4.131791E-03
1.450000E-01	G	-3.110365E-13	3.045057E-01	0.0	0.0	0.0	3.544843E-03
1.500000E-01	G	3.340707E-13	3.081025E-01	0.0	0.0	0.0	3.653972E-03
1.550000E-01	G	2.922648E-13	3.200462E-01	0.0	0.0	0.0	4.591412E-03
1.600000E-01	G	-3.521030E-13	3.293268E-01	0.0	0.0	0.0	5.287924E-03
1.650000E-01	G	-2.716308E-13	3.311619E-01	0.0	0.0	0.0	5.528242E-03
1.700000E-01	G	3.694490E-13	3.231436E-01	0.0	0.0	0.0	5.104529E-03
1.750000E-01	G	2.484991E-13	3.065190E-01	0.0	0.0	0.0	4.249747E-03
1.800000E-01	G	-3.840392E-13	2.952616E-01	0.0	0.0	0.0	3.526874E-03
1.850000E-01	G	-2.248481E-13	2.917908E-01	0.0	0.0	0.0	3.784619E-03
1.900000E-01	G	3.963030E-13	2.912053E-01	0.0	0.0	0.0	4.286640E-03
1.950000E-01	G	2.020232E-13	2.859452E-01	0.0	0.0	0.0	4.480059E-03
2.000000E-01	G	-4.083513E-13	2.722810E-01	0.0	0.0	0.0	4.042186E-03
2.050000E-01	G	-1.765152E-13	2.527504E-01	0.0	0.0	0.0	3.227160E-03
2.100000E-01	G	4.201921E-13	2.316211E-01	0.0	0.0	0.0	2.201299E-03
2.150000E-01	G	1.527621E-13	2.201219E-01	0.0	0.0	0.0	2.039457E-03
2.200000E-01	G	-4.296603E-13	2.179150E-01	0.0	0.0	0.0	2.622352E-03
2.250000E-01	G	-1.259962E-13	2.165539E-01	0.0	0.0	0.0	3.283076E-03

* * * END OF JOB * * *

CDC CYBER SERIES
MODEL 173

RIGID FORMAT SERIES P

LEVEL 17.5.7

SYSTEM GENERATION DATE - 12/15/80

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID NASTRAN,DEMO
APP DISP
SOL 13,0
  ALTER 165,165 $   R.F.13, LEVEL 17
$         CALCULATE GENERALIZED MASS AND STIFFNESS.
  READ KBLL,MAA,,,EED,USET,CASECC/LAMA,PHIA,MI,OEIGS/C,N,MODES/V,N,
       NEIGV/C,N,3 $
  ENDALTER
TIME 10
CEND
```

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

C A S E   C O N T R O L   D E C K   E C H O

```
CARD
COUNT
  1      TITLE=NASTRAN COURSE  - - -  DEMO. PROB. 13
  2      SUBTITLE=NORMAL MODES WITH DIFFERENTIAL STIFFNESS
  3      LABEL=ROTATING CANTILEVER BEAM (HELICOPTER BLADE)
  4       SPC= 11
  5      DISP=ALL
  6      OLOAD=ALL
  7      SPCFORCE=ALL
  8      SUBCASE 1
  9      LABEL=LINEAR STATIC SOLUTION
 10      LOAD=22
 11      SUBCASE 2
 12      LABEL=STATIC DIFFERENTIAL STIFFNESS SOLUTION
 13      $  DSCOEF=DEFAULT    (REQUIRED FOR LEVEL 16, BUT NOT FOR LEVEL 17)
 14      SUBCASE 3
 15      LABEL=NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED)
 16      METHOD=41
 17      BEGIN BU'K
```

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT        .   1  ..   2   ..   3   ..   4   ..   5   ..   6   ..   7   ..   8   ..   9   ..  10  .
    1-        BAROR            31                       0.0      1.       0.0      1
    2-        CBAR    1                 1        2
    3-        CBAR    2                 2        3
    4-        CBAR    3                 3        4
    5-        CBAR    4                 4        5
    6-        CBAR    5                 5        6                                            +B5
    7-        CBAR    6                 6        7
    8-        CBAR    7                 7        8
    9-        CBAR    8                 8        9
   10-        CBAR    9                 9        10
   11-        CBAR    10                10       11
   12-        CBAR    11                11       12
   13-        CBAR    12                12       13
   14-        CBAR    13                13       14
   15-        CBAR    14                14       15
   16-        CBAR    15                15       16
   17-        CBAR    16                16       17
   18-        CBAR    17                17       18
   19-        CBAR    18                18       19
   20-        CBAR    19                19       20
   21-        CBAR    20                20       21
   22-        EIGR    41       INV      0.0      1.       1        1                 1.-3     +E41
   23-        +E41    MAX
   24-        GRDSET                                                      345
   25-        GRID    1                 0.0
   26-        GRID    2                 5.
   27-        GRID    3                 10.
   28-        GRID    4                 15.
   29-        GRID    5                 20.
   30-        GRID    6                 25.
   31-        GRID    7                 30.
   32-        GRID    8                 35.
   33-        GRID    9                 40.
   34-        GRID    10                45.
   35-        GRID    11                50.
   36-        GRID    12                55.
   37-        GRID    13                60.
   38-        GRID    14                65.
   39-        GRID    15                70.
   40-        GRID    16                75.
   41-        GRID    17                80.
   42-        GRID    18                85.
   43-        GRID    19                90.
   44-        GRID    20                95.
   45-        GRID    21                100.
   46-        MAT1    32       30.+6             .3       7.324-4                            +STEEL
   47-        PBAR    31       32       .30680   7.490-3  7.490-3  1.498-2                   +P31
   48-        +P31    0.3125   0.       -0.3125  0.       0.       0.3125   0.       0.       +P31A
   49-        +P31A   0.75     0.75     0.
   50-        RFORCE  22       1                 1.5      0.0      1.       0.0
```

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

S O R T E D   B U L K   D A T A   E C H O

```
 CARD
 COUNT        .   1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   51-        SPC1    11      126     1
              ENDDATA
```

```
ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

     LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING


*** USER POTENTIALLY FATAL MESSAGE  11,
                        POSSIBLE ERROR IN DMAP INSTRUCTION SSG1      INSTRUCTION NO.  89
 DEFAULT OPTION FOR OUTPUT DATA BLOCKS - MAKE SURE MISSING BLOCKS ARE NOT REQUIRED.

      **NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**



*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE      34 STARTING WITH ID       1


***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA      ( N =   60 )
           TIME ESTIMATE=       1          C AVG =      4          PC AVG =     0   SPILL GROUPS =     0              S AVG =        1
         ADDITIONAL CORE= -28488           C MAX =      5           PCMAX =     0      PC GROUPS =     0  PREFACE LOOPS =        1

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 2 NT,NBR PASSES =    1,EST. TIME =       .1
```

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -7.1805861E-13

*** USER INFORMATION MESSAGE 3035

FOR LOAD     2 EPSILON SUB E =  0.

                    MPYAD--NULL MATRIX PRODUCT
                    METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .0
```

LINEAR STATIC SOLUTION SUBCASE 1

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.421374E-05	0.0	0.0	0.0	0.0	0.0
3	G	1.081564E-04	0.0	0.0	0.0	0.0	0.0
4	G	1.615569E-04	0.0	0.0	0.0	0.0	0.0
5	G	2.141443E-04	0.0	0.0	0.0	0.0	0.0
6	G	2.656473E-04	0.0	0.0	0.0	0.0	0.0
7	G	3.157950E-04	0.0	0.0	0.0	0.0	0.0
8	G	3.643163E-04	0.0	0.0	0.0	0.0	0.0
9	G	4.109401E-04	0.0	0.0	0.0	0.0	0.0
10	G	4.553954E-04	0.0	0.0	0.0	0.0	0.0
11	G	4.974110E-04	0.0	0.0	0.0	0.0	0.0
12	G	5.367160E-04	0.0	0.0	0.0	0.0	0.0
13	G	5.730392E-04	0.0	0.0	0.0	0.0	0.0
14	G	6.061096E-04	0.0	0.0	0.0	0.0	0.0
15	G	6.356561E-04	0.0	0.0	0.0	0.0	0.0
16	G	6.614076E-04	0.0	0.0	0.0	0.0	0.0
17	G	6.830931E-04	0.0	0.0	0.0	0.0	0.0
18	G	7.004415E-04	0.0	0.0	0.0	0.0	0.0
19	G	7.131817E-04	0.0	0.0	0.0	0.0	0.0
20	G	7.210427E-04	0.0	0.0	0.0	0.0	0.0
21	G	7.237534E-04	0.0	0.0	0.0	0.0	0.0

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

LINEAR STATIC SOLUTION SUBCASE 1

L O A D V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
2	G	4.989832E-01	0.0	0.0	0.0	0.0	0.0
3	G	9.979665E-01	0.0	0.0	0.0	0.0	0.0
4	G	1.496950E+00	0.0	0.0	0.0	0.0	0.0
5	G	1.995933E+00	0.0	0.0	0.0	0.0	0.0
6	G	2.494916E+00	0.0	0.0	0.0	0.0	0.0
7	G	2.993899E+00	0.0	0.0	0.0	0.0	0.0
8	G	3.492883E+00	0.0	0.0	0.0	0.0	0.0
9	G	3.991866E+00	0.0	0.0	0.0	0.0	0.0
10	G	4.490849E+00	0.0	0.0	0.0	0.0	0.0
11	G	4.989832E+00	0.0	0.0	0.0	0.0	0.0
12	G	5.488816E+00	0.0	0.0	0.0	0.0	0.0
13	G	5.987799E+00	0.0	0.0	0.0	0.0	0.0
14	G	6.486782E+00	0.0	0.0	0.0	0.0	0.0
15	G	6.985765E+00	0.0	0.0	0.0	0.0	0.0
16	G	7.484749E+00	0.0	0.0	0.0	0.0	0.0
17	G	7.983732E+00	0.0	0.0	0.0	0.0	0.0
18	G	8.482715E+00	0.0	0.0	0.0	0.0	0.0
19	G	8.981698E+00	0.0	0.0	0.0	0.0	0.0
20	G	9.480681E+00	0.0	0.0	0.0	0.0	0.0
21	G	4.989832E+00	0.0	0.0	0.0	0.0	0.0

LINEAR STATIC SOLUTION

SUBCASE 1

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-9.979665E+01	0.0	0.0	0.0	0.0	0.0

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KBLL      ( N =    60 )
           TIME ESTIMATE=      1          C AVG =      4          PC AVG =      0   SPILL GROUPS =     0              S AVG =      1
         ADDITIONAL CORE= -28488          C MAX =      5           PCMAX =      0      PC GROUPS =     0  PREFACE LOOPS =      1
```

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

C O N T E N T S   O F   P A R A M E T E R   T A B L E

DET	1.134664E+04

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

C O N T E N T S O F P A R A M E T E R T A B L E

POWER 0

METHOD 2 NT,NBR PASSES = 1,EST. TIME = .1

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

```
*** USER INFORMATION MESSAGE 3035

FOR LOAD     1 EPSILON SUB E = -7.1805861E-13

*** USER INFORMATION MESSAGE 3035

FOR LOAD     2 EPSILON SUB E =  0.

                                  MPYAD--NULL MATRIX PRODUCT
                                  METHOD 2 T ,NBR PASSES =    1,EST. TIME =       .0

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED
```

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

STATIC DIFFERENTIAL STIFFNESS SOLUTION SUBCASE 2

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	-9.979665E+01	0.0	0.0	0.0	0.0	0.0

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

STATIC DIFFERENTIAL STIFFNESS SOLUTION SUBCASE 2

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	5.421374E-05	0.0	0.0	0.0	0.0	0.0
3	G	1.081564E-04	0.0	0.0	0.0	0.0	0.0
4	G	1.615569E-04	0.0	0.0	0.0	0.0	0.0
5	G	2.141443E-04	0.0	0.0	0.0	0.0	0.0
6	G	2.656473E-04	0.0	0.0	0.0	0.0	0.0
7	G	3.157950E-04	0.0	0.0	0.0	0.0	0.0
8	G	3.643163E-04	0.0	0.0	0.0	0.0	0.0
9	G	4.109401E-04	0.0	0.0	0.0	0.0	0.0
10	G	4.553954E-04	0.0	0.0	0.0	0.0	0.0
11	G	4.974110E-04	0.0	0.0	0.0	0.0	0.0
12	G	5.367160E-04	0.0	0.0	0.0	0.0	0.0
13	G	5.730392E-04	0.0	0.0	0.0	0.0	0.0
14	G	6.061096E-04	0.0	0.0	0.0	0.0	0.0
15	G	6.356561E-04	0.0	0.0	0.0	0.0	0.0
16	G	6.614076E-04	0.0	0.0	0.0	0.0	0.0
17	G	6.830931E-04	0.0	0.0	0.0	0.0	0.0
18	G	7.004415E-04	0.0	0.0	0.0	0.0	0.0
19	G	7.131817E-04	0.0	0.0	0.0	0.0	0.0
20	G	7.210427E-04	0.0	0.0	0.0	0.0	0.0
21	G	7.237534E-04	0.0	0.0	0.0	0.0	0.0

NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED) SUBCASE 3

D I S P L A C E M E N T   V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	0.0	0.0	0.0	0.0	0.0	0.0
3	G	0.0	0.0	0.0	0.0	0.0	0.0
4	G	0.0	0.0	0.0	0.0	0.0	0.0
5	G	0.0	0.0	0.0	0.0	0.0	0.0
6	G	0.0	0.0	0.0	0.0	0.0	0.0
7	G	0.0	0.0	0.0	0.0	0.0	0.0
8	G	0.0	0.0	0.0	0.0	0.0	0.0
9	G	0.0	0.0	0.0	0.0	0.0	0.0
10	G	0.0	0.0	0.0	0.0	0.0	0.0
11	G	0.0	0.0	0.0	0.0	0.0	0.0
12	G	0.0	0.0	0.0	0.0	0.0	0.0
13	G	0.0	0.0	0.0	0.0	0.0	0.0
14	G	0.0	0.0	0.0	0.0	0.0	0.0
15	G	0.0	0.0	0.0	0.0	0.0	0.0
16	G	0.0	0.0	0.0	0.0	0.0	0.0
17	G	0.0	0.0	0.0	0.0	0.0	0.0
18	G	0.0	0.0	0.0	0.0	0.0	0.0
19	G	0.0	0.0	0.0	0.0	0.0	0.0
20	G	0.0	0.0	0.0	0.0	0.0	0.0
21	G	0.0	0.0	0.0	0.0	0.0	0.0

```
***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA     ( N =   60 )
          TIME ESTIMATE=      1         C AVG =      4         PC AVG =      0   SPILL GROUPS =      0            S AVG =        1
       ADDITIONAL CORE= -23722          C MAX =      5          PCMAX =      0      PC GROUPS =      0  PREFACE LOOPS =        1
                                          METHOD 1 NT,NBR PASSES =    1,EST. TIME =      .0
                                          METHOD 3 T ,NBR PASSES =    1,EST. TIME =      .0
```

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

E I G E N V A L U E A N A L Y S I S S U M M A R Y (INVERSE POWER METHOD)

```
NUMBER OF EIGENVALUES EXTRACTED . . . . . .            1

NUMBER OF STARTING POINTS USED . . . . . . .           1

NUMBER OF STARTING POINT MOVES . . . . . . .           0

NUMBER OF TRIANGULAR DECOMPOSITIONS . . . .            1

TOTAL NUMBER OF VECTOR ITERATIONS . . . . .            4

REASON FOR TERMINATION . . . . . . . . . . .           7

LARGEST OFF-DIAGONAL MODAL MASS TERM . . . .   0.

                                         . . .         0
          MODE PAIR . . . . . . . . . .
                                         . . .         0

NUMBER OF OFF-DIAGONAL MODAL MASS
     TERMS FAILING CRITERION . . . . . . . .           0
```

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

R E A L   E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIAN FREQUENCY	CYCLIC FREQUENCY	GENERALIZED MASS	GENERALIZED STIFFNESS
1	1	2.284654E+02	1.511507E+01	2.405639E+00	5.745887E-03	1.312736E+00

METHOD 1 T ,NBR PASSES = 1,EST. TIME = .0

ROTATING CANTILEVEP BEAM (HELICOPTER BLADE)

```
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK PLTPAR   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK GPSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
*** SYSTEM WARNING MESSAGE 3022
    DATA BLOCK ELSETS   IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.
```

NORMAL MODES WITH DIFFERENTIAL STIFFNESS

NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED) SUBCASE 3

EIGENVALUE = 2.284654E+02

R E A L E I G E N V E C T O R N O . 1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
2	G	1.603758E-20	4.851953E-03	0.0	0.0	0.0	1.903171E-03
3	G	3.197595E-20	1.869432E-02	0.0	0.0	0.0	3.599624E-03
4	G	4.771655E-20	4.054153E-02	0.0	0.0	0.0	5.108188E-03
5	G	6.316205E-20	6.949685E-02	0.0	0.0	0.0	6.445591E-03
6	G	7.821702E-20	1.047423E-01	0.0	0.0	0.0	7.626675E-03
7	G	9.278851E-20	1.455300E-01	0.0	0.0	0.0	8.664623E-03
8	G	1.057866E-19	1.911741E-01	0.0	0.0	0.0	9.571178E-03
9	G	1.201251E-19	2.410445E-01	0.0	0.0	0.0	1.035687E-02
10	G	1.327217E-19	2.945611E-01	0.0	0.0	0.0	1.103121E-02
11	G	1.444993E-19	3.511892E-01	0.0	0.0	0.0	1.160297E-02
12	G	1.553846E-19	4.104366E-01	0.0	0.0	0.0	1.208031E-02
13	G	1.653115E-19	4.718510E-01	0.0	0.0	0.0	1.247105E-02
14	G	1.742190E-19	5.350184E-01	0.0	0.0	0.0	1.278239E-02
15	G	1.820523E-19	5.995636E-01	0.0	0.0	0.0	1.302354E-02
16	G	1.887635E-19	6.651507E-01	0.0	0.0	0.0	1.320102E-02
17	G	1.943113E-19	7.314845E-01	0.0	0.0	0.0	1.332376E-02
18	G	1.986619E-19	7.983138E-01	0.0	0.0	0.0	1.340087E-02
19	G	2.017887E-19	8.654348E-01	0.0	0.0	0.0	1.344222E-02
20	G	2.036724E-19	9.326953E-01	0.0	0.0	0.0	1.345865E-02
21	G	2.043016E-19	1.000000E+00	0.0	0.0	0.0	1.346205E-02

NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED) SUECASE 3
EIGENVALUE = 2.284654E+02

F O R C E S   O F   S I N G L E - P O I N T   C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	-9.721706E-02	0.0	0.0	0.0	-8.007588E-02

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